

ajer

THE ALBERTA JOURNAL OF
EDUCATIONAL RESEARCH

VOLUME XLI

NUMBER 3

SEPTEMBER 1995

Special Issue
Canadian Perspectives on The Bell Curve

The Alberta Journal of Educational Research

Published in March, June, September, and December by the Faculty of Education, University of Alberta.

AJER is a quarterly journal devoted to the dissemination, criticism, interpretation, and encouragement of all forms of systematic enquiry into education and fields related to or associated with education.

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AJER gratefully acknowledges support from the Social Sciences and Humanities Research Council of Canada, the Alberta Advisory Committee for Educational Studies, and the Research Grants Office of the University of Alberta

The subscription rate is \$37.00 per year for individuals, \$45.00 per year for institutions. Add \$8.00 for delivery outside Canada. Single copies are \$8.00 each. Subscriptions and sales in Canada will be charged 7% GST. Please make cheques payable to *The Alberta Journal of Educational Research*. Back issues are available; rates supplied on request. Claims for undelivered copies must be received within three months of publication.

Address all communications and manuscript submissions to:

The Alberta Journal of Educational Research

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845 Education Centre South

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Edmonton, AB, Canada, T6G 2G5.

Fax: (403) 492-0236

Publications Mail Registration Number 1436



The Alberta Journal of Educational Research

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Special Issue: *Canadian Perspectives on The Bell Curve*

Introduction

I am pleased to introduce a special issue of the *Alberta Journal of Educational Research* that deals with Richard Herrnstein and Charles Murray's (1994) controversial book *The Bell Curve*. Following the publication of *The Bell Curve*, many commentaries, critiques, and reviews have appeared. There has even been a set of readings edited by Jacoby and Glaberman (1995) that is almost as lengthy as Herrnstein and Murray's book itself. What makes the present collection different is that it portrays the perspectives of Canadian academics.

This series of readings begins with an excellent overview of *The Bell Curve* that was written by Terry Belke, presently an assistant professor at Mount Allison University. Dr. Belke recently received his PhD in psychology from Harvard where he took graduate courses from and participated in research with Richard Herrnstein. In my opinion, Belke's paper provides a fair and accurate overview of the book.

The remaining papers are insightful commentaries on *The Bell Curve* written by psychologists, sociologists, and educators from across Canada. The commentaries range from questions concerning the appropriateness of the statistics to philosophical essays. The issues that are raised in the book and in the commentaries in this special issue are important, have a potentially significant impact for social policy and education, and will be discussed for years to come.

Judy Cameron
Editor

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Terry W. Belke
Mount Allison University

A Synopsis of Herrnstein and Murray's *The Bell Curve: Intelligence and Class Structure in American Life* (New York, Free Press, 1994)

The Bell Curve: Intelligence and Class Structure in American Life by Richard J. Herrnstein and Charles Murray has been the source of considerable debate in recent times. Given the controversial nature of the subject, *The Bell Curve* deserves a careful and considerate reading. Readers will bring to their reading of this book an initial attitude toward the subject that will color their interpretation of the message that Herrnstein and Murray are trying to convey. The reader who is vehemently opposed to any claim that "intelligence" has a genetic basis will dismiss the words as rantings of racists. At the other end of the spectrum, readers consumed with hatred and bigotry toward individuals of other races and ethnicity will interpret the contents of this book as justification for their biases and actions. In either case, these readers will be doing this work a disservice. To understand what this book has to offer and to keep it in perspective, the reader should endeavor to suspend these initial attitudes so that the book can be read without prejudice. This is not to say that the analyses, interpretations, and forecasts offered by Herrnstein and Murray are beyond critique, but that they should be heard.

The introduction begins with an overview of the history of the concept of intelligence beginning with Galton and tracing the developments surrounding the IQ controversy to modern times. Galton first used tests of perceptual and motor skills to discriminate differences in intelligence. Later Binet developed tests of reasoning, drawing, analogies, and pattern recognition that form the basis of modern intelligence tests. Spearman's contribution was the concept of a general intelligence factor (*g*) underlying correlations between tests of intelligence. Early advances in the study of intelligence were reversed by advocacy of testing for racial policies (e.g., sterilization laws). Finally, the 1960s heralded a fundamental shift away from causes within the individual as the source of social ills to causes outside the individual. Social factors that could be redressed by the government were considered the source of deficiencies. In this context of egalitarianism, recognition of biological bases of individual differences was and remains anathema.

The introduction closes with an outline of Herrnstein and Murray's perspective. First, the authors warn the readers against committing the ecological fallacy, that is, generalization from the aggregate to the individual, given that the analyses to be presented are for aggregate data. Second, the authors state that the importance of intelligence among human virtues has been inflated and

Terry Belke received his doctorate from Harvard University in 1993. As a graduate student in the Department of Psychology he worked with Richard Herrnstein from 1988 to 1991.

that the assumption that a person's intelligence can be inferred from casual interactions is erroneous. Third, that the identification of IQ with attractive human qualities is wrong. Most importantly, readers should keep the following statement in mind as they read the book.

Measures of intelligence have reliable statistical relationships with important social phenomena, but they are a limited tool for deciding what to make of any given individual. Repeat it we must, for one of the problems of writing about intelligence is how to remind readers often enough how little an IQ score tells you about whether the human being next to you is someone whom you will admire or cherish. (p. 21)

Part I: The Emergence of a Cognitive Elite

This part documents the transformation of society during the 20th century from one in which social standing was largely determined by birth and cognitive ability was evenly spread throughout social strata to a society in which social mobility is a function of cognitive ability.

In the chapter entitled "Cognitive Class and Education, 1900-1990," Herrnstein and Murray document the opening of colleges to the general population that led the way to the cognitive partitioning of the American population. Three processes were initiated: the growth of the college population, a more efficient recruitment of cognitive ability, and further sorting of cognitive ability by the colleges. From 1900 to 1990, the percentage of 23-year-olds with bachelor's degrees increased from 2% to 30%. However, this increase in the probability of going to college was not evenly spread across the range of cognitive ability. As the authors show, the probability of entering college increased dramatically for students in the upper half of the IQ distribution, but decreased marginally for those in the lower half. Finally, this influx of cognitive ability into colleges was not evenly distributed among colleges. Colleges of greater prestige harvested a greater yield of top students than did colleges of lesser prestige. This process was aided by long-distance travel becoming commonplace and an increase in the number of families that could afford to send their offspring to elite colleges. They close this chapter with a discussion of the isolation of different segments of society created by cognitive partitions.

In the chapter entitled "Cognitive Partitioning by Occupation," Herrnstein and Murray document a second process of occupational sorting by cognitive ability. High-IQ professions have grown tremendously since 1940, and the proportion of individuals in the top decile of IQ in these professions has increased. Another line of evidence for occupational cognitive segregation offered by the authors is the decline in CEOs with only high school and the concomitant increase in CEOs with graduate degrees. The point of this chapter is that

in midcentury, America was still a society in which a large proportion of the top tenth of IQ, probably a majority, were scattered throughout the population, not working in a high-IQ profession and not in a managerial position. As the century draws to a close, a very high proportion of that same group is concentrated within those highly screened jobs. (p. 61)

In "Economic Pressures to Partition," the third chapter, the authors argue that worker productivity is directly linked to intelligence and that this rela-

tionship is sufficient to have economic consequences. This thesis directly contradicts the received wisdom that "the relation between IQ scores and job performance is weak, and, second, whatever weak relationship there is depends not on general intellectual capacity but on the particular mental capacities or skills required by a particular job" (p. 66). Herrnstein and Murray suggest that this received wisdom is repudiated by meta-analyses that show that job performance is well predicted by broadly based tests of intelligence, that the general intelligence factor is a better predictor of job performance than tests of specific skills, and that correlations between tested intelligence and job performance are higher than previously considered (p. 70). Tests of cognitive ability have been shown to be better predictors of job performance ratings than biographical data, reference checks, education, interview, college grades, interest, or age. In terms of economic consequences, Herrnstein and Murray illustrate through example the difference in the value of the productivity of an employee at the 50th and the 84th percentile of the IQ distribution. The magnitude of the difference in productivity varies with the complexity of the job. Estimates of the costs entailed in disallowing hiring based on intelligence range from a maximum loss of 80 billion to a minimum loss of 13 billion. The main point of the chapter is that intelligence is directly related to job performance and that "getting rid of intelligence tests in hiring—as policy is trying to do—will not get rid of the importance of intelligence" (p. 88).

In "Steeper Ladders, Narrower Gates," Herrnstein and Murray attempt to forecast the social consequences of continued cognitive partitioning in education and occupations. First of all, the value of intelligence in the marketplace has increased. Wages for individuals in high-IQ occupations have grown more rapidly than the salaries of low IQ occupations. According to the authors, this increasing disparity in wages reflects an increasing economic demand for intelligence. "The more complex a society becomes, the more valuable are the people who are especially good at dealing with complexity" (p. 99). Along with this cognitive partitioning comes segregation of individuals of different cognitive abilities in both the workplace and community. Finally, Herrnstein and Murray discuss the implications of the conclusion that success in life will be based to some extent on inherited differences in cognitive ability among people (p. 108). As the social environment becomes more uniform, the proportion of variance attributable to inherited differences in cognitive ability increases; therefore, success in a society stratified by cognitive ability depends increasingly on inherited differences and decreasingly on the social environment (pp. 109-110). In addition, Herrnstein and Murray suggest that there may be an increasing tendency for individuals of similar levels of cognitive ability to marry aided by the feminist revolution. In summary, Herrnstein and Murray state that three phenomena are the result of these sorting processes:

1. The cognitive elite is getting richer, in an era when everybody else is having to struggle to stay even.
2. The cognitive elite is increasingly segregated physically from everyone else, in both the workplace and the neighborhood.
3. The cognitive elite is increasingly likely to intermarry. (p. 114)

Part II: Cognitive Classes and Social Behavior

Part II documents the relationship of cognitive ability to social behaviors. According to the authors, "high cognitive ability is generally associated with socially desirable behaviors, low cognitive ability with socially undesirable ones" (p. 117). In this part, Herrnstein and Murray argue that intelligence rather than socioeconomic status is responsible for group differences in social behavior. Furthermore, they maintain that the potential causal role of cognitive ability has been neglected and that even if cognitive ability is not the cause of differences in social behaviors, viewing the problem from the perspective of cognitive ability will contribute to our understanding of these social problems. The analyses in this part were done using the National Longitudinal Survey of Labor Market Experience of Youth (NLSY). All analyses were conducted with non-Latino white individuals to demonstrate that the relationship of cognitive ability to social behavior is independent of race and ethnicity (p. 125).

In Chapter 5, entitled "Poverty," Herrnstein and Murray show that low intelligence is a stronger precursor of poverty than coming from a low socioeconomic status background. The proportion of Americans living below the poverty line decreased from 50% in 1940 to 15% in 1970 and has remained around 15% since 1970. Using the NLSY, the percentage of white youths living in poverty is shown broken down by parents' socioeconomic status (SES) and by cognitive class of the individual. In both analyses, the percentage of individuals living in poverty increases with decreasing parental SES and decreasing cognitive ability. When both parental SES and intelligence are placed in the same analysis, the relationship between IQ and probability of being in poverty is stronger than the relationship between parental SES and the probability of being impoverished. Herrnstein and Murray conclude that "cognitive ability is more important than parental SES in determining poverty" (p. 135).

When the relationships are further broken down into educational categories, the relationship between IQ and poverty is stronger than the relationship between parental SES and poverty for individuals with a high school diploma. However, for individuals with a bachelor's degree, neither IQ nor parental SES shows a relationship with poverty. For children, the probability of living in poverty is higher the lower the IQ of the mother, independent of marital status. When marital status is considered, the relationship between mother's IQ and the probability that a child will live in poverty is stronger for mothers who are separated, divorced, or never married than for married women. The relationship between parental SES for mothers and the probability that a child will live in poverty is weaker. In conclusion, the authors state that "the high rates of poverty that afflict certain segments of the white population are determined more by intelligence than by socioeconomic background" (p. 141).

In the chapter entitled "Schooling," according to Herrnstein and Murray dropping out of school is a recent phenomenon that developed with "the assumption that it is normal to remain in school through age 17" (p. 144). The proportion of people who obtain a high school diploma rose throughout the century from fewer than 10% in 1900 to around 80% in 1964 and then leveled off at around 75%. Early in the century the IQ gap between those who dropped out and those who completed high school was marginal; however, since the 1950s the gap between those who complete and those who do not increased to

approximately 15 points. Analysis of the NLSY showed that the percentage of students who dropped out were almost entirely from the bottom quartile of the IQ distribution. Furthermore, the relationship between probability of dropping out and IQ score was stronger than the relationship with parental SES. For temporary dropouts, the relationship between parental SES and the probability of getting a GED (General Educational Development) instead of a high school diploma was stronger than the relationship with IQ. Conversely, the probability of getting a bachelor's degrees increases with IQ and the relationship with IQ is stronger than the relationship with parental SES. In sum, both socioeconomic background and cognitive ability play a role in performance in school.

In the chapter "Unemployment, Idleness, and Injury," analyses of the NLSY data by Herrnstein and Murray showed that the probability of being out of the labor force for a month or more decreased as IQ scores increased but increased as parental SES increased. Low cognitive ability also increased the risk of being off work due to disability. In conclusion, Herrnstein and Murray qualify these relations by noting that "most white males at every level of cognitive ability were in the labor force and working, even at the lowest cognitive levels" (p. 165).

"Family Matters," the next chapter, explores the relationship of cognitive ability to marriage, divorce, and illegitimacy. Analyses of the NLSY confirm the general view that the average age at first marriage tends to be high for individuals higher in cognitive ability than for those lower in cognitive ability. In terms of the probability of marriage by age 30, for individuals with a high school educational level the probability increases with IQ and declines marginally as parental SES goes from low to high. For individuals with college, the probability does not vary with either parental SES or IQ. In terms of divorce, analysis of the NLSY showed that the probability of divorce within the first five years of marriage decreased as IQ went from low to high, but increased as parental SES went from low to high. In terms of educational levels, for individuals with a college education, the probability of divorce decreased as IQ scores increased. No relation was observed for high school graduates. The rate of illegitimate births has increased markedly in the past 30 years from 11% in the 1960s to 30% in the 1990s. Analyses of the NLSY showed that the percentage of white women who had ever given birth to an illegitimate child increased from 2% to 32% as cognitive class moved from very bright to very dull. For both IQ and parental SES, as values went from low to high, the probability of an illegitimate birth declined; however, the relationship of IQ to illegitimacy was stronger than the relationship of parental SES. Other analyses showed that the odds of a child being born out of wedlock was lowest if either the mother or both parents were absent by age 14 and highest if only the father was absent. In addition, the probability of the first child being born out of wedlock for white mothers living in poverty decreased markedly as IQ went from low to high and increased markedly as parental SES went from low to high. Herrnstein and Murray conclude that "low intelligence is an important independent cause of illegitimacy" (p. 189). Furthermore, comparing the top and bottom quartiles of IQ, the authors note that in the top quartile of cognitive ability, the percentage of households that consist of a married couple is higher whereas the percentage

of households that have experienced divorce and percentage of children born out of wedlock are lower than for the bottom quartile of cognitive ability.

In "Welfare Dependency," Herrnstein and Murray showed that the probability of mothers going on Aid to Families with Dependent Children within a year of first birth decreased as both IQ and parental SES went from low to high with a stronger relationship found for IQ. When the analysis focuses only on chronic welfare recipients rather than all welfare recipients, the probability of a white woman becoming a chronic welfare recipient decreases as both IQ and parental SES go from low to high; however, in this case, the relationship with parental SES is stronger. Education played a role in that women with high school or less were at risk for becoming chronic welfare recipients, not women with more than high school. Herrnstein and Murray conclude that "having a baby without a husband is a dumb thing to do. Going on welfare is an even dumber thing to do, if you can possibly avoid it" (p. 200).

In "Parenting," Herrnstein and Murray ask, "is the competence of parents at all affected by how intelligent they are?" (p. 203). The authors review literature that parenting styles differ with social class. Middle-class parents reason with their children and appeal to abstract principles, whereas working-class parents use physical punishment. Middle-class parents encourage children to ask questions and give explanations; working-class parents expect compliance without question. In terms of abuse and neglect, both are concentrated in lower socioeconomic classes. Herrnstein and Murray suggest that these studies have neglected the possibility that parental IQ rather than status plays a role in parenting style. To support this thesis, analysis of the NLSY showed that the probability of a white mother having a low-birth-weight baby decreased as the mother's IQ went from low to high. In contrast, variation in the mother's socioeconomic background did not affect the probability of a low-birth-weight baby. Poverty did not play a statistically significant role. Another analysis showed that the probability that a child will live in poverty during the first three years of life varied with both mother's IQ and socioeconomic background. Preexisting poverty accounted for the relationship with mother's socioeconomic background, but not cognitive ability. Both mother's IQ and socioeconomic background were found to have a moderate relationship with developmental problems in children. Finally, Herrnstein and Murray showed that the probability of having a child in the bottom decile of IQ decreased markedly as the mother's IQ went from low to high and moderately as mother's SES background went from low to high. The conclusion offered by the authors is that "people with low cognitive ability tend to be worse parents" (p. 232).

In "Crime," Herrnstein and Murray open the chapter with a discussion of the dichotomy of theories of criminal behavior: psychological and sociological. Sociological theories were prevalent during the 1950s through the 1970s. Psychological theories were prevalent early in the century. Herrnstein and Murray argue that crime is probably a function of both; yet public perceptions tend to be at the sociological pole. Previous research has suggested that criminals have a lower than average IQ. The authors explored the role that cognitive ability may play in creating criminals using the NLSY. Consistent with previous research, the mean IQ of white males sentenced to a correctional facility was

lower than the mean IQ of white males who either had no involvement with the law or were stopped by the police. Other analyses showed that variance in IQ was more strongly related to the probability of being in the top decile of self-reported crime and ever being interviewed in a correctional facility than was parental SES. A low IQ was a significant risk factor. In conclusion, Herrnstein and Murray offer the caution that “despite the relationship of low IQ to criminality, the great majority of people with low cognitive ability are law abiding” (p. 251) and the conclusion that “in trying to understand how to deal with the crime problem, much of the attention now given to problems of poverty and unemployment should be shifted to another question altogether: coping with cognitive disadvantage” (p. 251).

In “Civility and Citizenship,” Herrnstein and Murray argue that cognitive ability makes a contribution to the capacity for civility and citizenship (p. 253). In particular, behavior such as voting indicates an involvement in the welfare of the community. Voting varies with socioeconomic class: “college graduates vote more than high school graduates; white-collar workers vote more than blue-collar workers; and the rich vote more than the poor” (p. 258). Indirect evidence suggests that there is an effect of cognitive ability. Analysis of the middle-class values index in the NLSY was conducted as a proxy for involvement in civility. The analysis showed that as both IQ and parental SES went from low to high, the probability of a score of “Yes” on the middle-class values (MCV) index increased. In conclusion, Herrnstein and Murray suggest that “a smarter population is more likely to be, and more capable of being made into, a civil citizenry” (p. 266).

Part III: The National Context

In this section, Herrnstein and Murray describe “ethnic differences in cognitive ability and social behavior, the effects of fertility patterns on the distribution of intelligence, and the overall relationship of low cognitive ability to what has become known as the underclass” (p. 267). Given the controversial nature of these topics, the authors request that this section be read carefully.

In Chapter 13, “Ethnic Differences in Cognitive Ability,” the authors convey the message that “ethnic differences in cognitive ability are real and have consequences” (p. 269). The purposes of the authors in this chapter are twofold:

our primary purpose is to lay out a set of statements, as precise as the state of knowledge permits, about what is currently known about the size, nature, validity, and persistence of ethnic differences on measures of cognitive ability. A secondary purpose is to try to induce clarity in ways of thinking about ethnic differences, for discussions about such differences tend to run away with themselves, blending issues of fact, theory, ethics, and public policy that need to be separated. (p. 270)

Herrnstein and Murray begin by reviewing evidence about the size of ethnic differences in cognitive ability. In general they conclude that Asians and Asian Americans have a higher average IQ than white Americans, and white Americans have a higher mean IQ than black Americans. The difference in IQ between white and black Americans is given as approximately 1.08 standard deviations. In the NLSY, “a person with the black mean was at the 11th

percentile of the white distribution, and a person with the white mean was at the 91st percentile of the black distribution" (p. 278).

The most commonly held view of this black-white difference is that it represents bias in the test. Herrnstein and Murray suggest that the difference is not a function of either predictive or cultural bias. First, "overwhelmingly, the evidence is that the major standardized tests used to help make school and job decisions do not under predict job performance" (p. 281). Second, "the B/W difference is wider on items that appear to be culturally neutral than on items that appear to be culturally biased" (p. 282). Nor does a lack of motivation to try appear to account for the difference. Herrnstein and Murray discuss the possibility of a uniform background bias, "in other words, the tests may be biased against disadvantaged groups, but the traces of bias are invisible because the bias permeates all areas of the group's performance" (p. 285). Finally, the authors consider the role of SES in generating the black/white difference in cognitive ability. First, when the two groups are matched on SES, the difference in IQ scores between the groups shrinks; however, Herrnstein and Murray point out that because SES is a result of cognitive ability, controlling for SES in this manner is guaranteed to reduce IQ differences. Second, although black IQ scores increase with SES, the magnitude of the black/white IQ difference does not decrease.

The answer to the question of whether the black/white difference is diminishing is "Yes." A review of the white/black difference in standard deviations from longitudinal data of the National Assessment of Educational Progress showed a decrease in the difference on tests of science, math, and reading across 9-, 13-, and 17-year-olds. Herrnstein and Murray speculate that the convergence may reflect rising investments in education and improvements in nutrition, shelter, and health care that disproportionately benefit cognitive development at the low end of SES (pp. 292-293). Despite the narrowing of the difference, whether convergence will continue is a source of speculation.

Next Herrnstein and Murray discuss the nature of the difference in cognitive ability between the races. The reasons given by the authors for tackling this controversial topic are to confront the assumption of genetic cognitive equality among the races that has practical consequences for society and to bring to the level of public discussion a topic that is taboo. "Taboos breed not only ignorance but misinformation" (p. 297). Finally, the authors acknowledge that

the evidence about ethnic differences can be misused, as many people say to us. Some readers may feel that this danger places a moral prohibition against examining the evidence for genetic factors in public. We disagree, in part because we see even greater dangers in the current gulf between public pronouncements and private beliefs. (pp. 297-298)

The first point that Herrnstein and Murray emphasize is "that a trait is genetically transmitted in individuals does not mean that group differences in that trait are also genetic in origin" (p. 298). From this point, the authors estimate that if the group differences are a function of environmental differences, then "the mean environment of whites is 1.58 standard deviations better than the mean environment of blacks and .32 standard deviation worse than the mean environment for East Asians" (p. 298). In the opinion of the authors,

environmental differences of this magnitude are implausible yet not impossible; however, for those who hold that the IQ difference is due to environmental differences, “explanations have to be formulated rather than simply assumed” (p. 299).

Herrnstein and Murray provide a case for thinking that genetics may be involved in the group differences. Profile differences between the groups are cited as evidence for a genetic factor. East Asians typically score at the same level or slightly lower than whites on verbal IQ subtests, but score much higher on subtests of visuospatial IQ. Blacks typically score higher than whites on subtests involving arithmetic and immediate memory whereas whites typically score higher than blacks on subtests of spatial-perceptual ability. Furthermore, observations consistent with Spearman’s hypothesis that the greater the degree to which a test measures *g*, the greater the black-white difference in test scores have been shown. The conceptual linkage to a genetic explanation comes from the statement that *g* has a high degree of heritability. Arguments against a genetic factor in group differences are reviewed. Briefly, these include uniform cultural bias, the Flynn effect (i.e., test scores tend to rise in the intervals between standardization), and transracial adoption studies.

In a final section, Herrnstein and Murray summarize the preceding discussion with the following:

If the reader is now convinced that either the genetic or environmental explanation has won out to the exclusion of the other, we have not done a sufficiently good job of presenting one side or the other. It seems highly likely to us that both genes and environment have something to do with racial differences. What might the mix be? We are absolutely agnostic on that issue; as far as we can determine, the evidence does not yet justify an estimate.

We are not so naive to think that making such statements will do much good. People find it next to impossible to treat ethnic differences with detachment. That there are understandable reasons for this only increases the need for thinking clearly and with precision about what is and is not important. In particular, we have found that the genetic aspect of ethnic differences has assumed an overwhelming importance. One symptom of this is that while this book was in preparation and regardless of how we described it to anyone who asked, it was assumed that we are faced with two alternatives: either (1) the cognitive difference between blacks and whites is genetic, which entails unspoken but dreadful consequences, or (2) the cognitive difference between blacks and whites is environmental, fuzzily equated with some sort of cultural bias in IQ tests, and the difference is therefore temporary and unimportant. (pp. 311-312)

Further on, Herrnstein and Murray discuss the hypothetical consequences of learning that ethnic differences in intelligence are genetic in origin.

If it were known that the B/W difference is genetic, would I treat individual blacks differently from the way I would treat them if the differences were environmental? Probably, human nature being what it is, some people would interpret the news as a license for treating all whites as intellectually superior to all blacks. But we hope that putting this possibility down in words makes it obvious how illogical—besides utterly unfounded—such reactions would be. (p. 312)

Second, the authors confront the common assumption that “if the differences are genetic, aren’t they harder to change than if they are environmental?” (p. 313). The error here, according to the authors, is the underlying assumption that environmentally induced deficits are less hard-wired and less real than genetically induced deficits (p. 313). In sum, Herrnstein and Murray state that knowledge that the differences are wholly genetic as opposed to wholly environmental does not justify treating another individual differently.

In Chapter 14, “Ethnic Inequalities in Relation to IQ,” Herrnstein and Murray offer a view of ethnic differences in the social behaviors previously discussed in Part II when cognitive ability is taken into account. Specifically, the probabilities of various outcomes are compared for whites, blacks, and Latinos before and after controlling for IQ. After controlling for IQ, ethnic differences in higher education, occupations, and wages diminish. Differences in the probability of living in poverty and of being unemployed also shrink when controlling for IQ. Ethnic differences in marriage rates do not change. For illegitimacy, the difference between whites and Latinos decreases; however, the difference between blacks and whites remains large. Disparities between the different ethnic groups in the probability that a woman has been on welfare also diminish when controlling for IQ. The disparity between blacks and whites in the probability of giving birth to a low-birth-weight baby also decreases. Ethnic differences in a child living in poverty for the first three years of life also diminish. Differences in the probability of incarceration between the different groups also decline. This chapter portrays the probability of various outcomes for members of different ethnic groups of similar cognitive ability. From this perspective, many ethnic differences in social and economic indicators diminish while others remain.

In Chapter 15, “The Demography of Intelligence,” Herrnstein and Murray explore the downward pressure exerted on the national distribution of cognitive ability by differences in birth rates across the range of cognitive ability.

In particular, if women with low scores reproduce more rapidly than women with high scores, the distribution of scores will, other things equal, decline, no matter whether the women with the low scores came by them through nature or nurture. (p. 342)

Prior to modernization, higher status females had a reproductive advantage over lower status females. More children of higher status females survived than did children of lower status females. During this period large families were the norm. With modernization, the birth rates of privileged females declined disproportionately as these women put off marriage and reproduction to take advantage of educational and career opportunities (p. 344). Birth rates among less educated and unprivileged females remained high due to the intrinsically rewarding nature of motherhood. Consequently, “if reproductive rates are correlated with income and educational levels, which are themselves correlated with intelligence, people with lower intelligence would presumably be outreproducing people with higher intelligence and thereby producing a dysgenic effect” (p. 345).

“Foretelling the future about fertility is a hazardous business, and foretelling it in terms of IQ points per generation is more hazardous still” (p. 348). Although Herrnstein and Murray decline to forecast the future, they do com-

ment on the current status of the number of children currently born to women at various IQ levels, the age at which they bear children, and the cognitive ability of immigrants. To illustrate the relation between IQ and fertility, Herrnstein and Murray show that in 1992, the mean number of children ever born to women ages 35 to 44 decreased as level of educational attainment increased. Furthermore, 71% more births occurred among high school dropouts than among college graduates (p. 349). The dysgenic effect is also influenced by the low IQ group having children at younger ages than the higher IQ group. Consequently, the low IQ group will produce more generations per unit time than will the high IQ group. In the NLSY, the mean age at first birth for mothers at the lowest level of cognitive ability was seven years younger than for mothers at the highest level.

Second, the mean ages at which women from different ethnic groups have children also differ. From the NLSY, the mean ages for whites, Latinos, and blacks were 24.3, 23.2, and 22.3 years respectively. Herrnstein and Murray predict that if these age differentials persist, they will increase the disparity in the cognitive ability of successive generations (p. 355). Finally, the authors suggest that immigration that constituted 29% of the population growth in the 1980s also contributes to the downward pressure on the national distribution of intelligence. Herrnstein and Murray estimate that the mean IQ of immigrants from the 1960s through the 1980s was less than the mean IQ of the native-born American population.

Putting the pieces together—higher fertility and a faster generational cycle among the less intelligent and an immigrant population that is probably somewhat below the native-born average—the case is strong that something worth worrying about is happening to the cognitive capital of the country. (p. 364)

In Chapter 16, “Social Behavior and the Prevalence of Low Cognitive Ability,” Herrnstein and Murray illustrate the prevalence of low cognitive ability among people who suffer most from the social problems outlined in Part II. Using the NLSY the percentages of individuals in poverty, permanent high school dropouts, men who worked 52 weeks in 1989, able-bodied men who did not work, men ever interviewed in jail, women ever on welfare, women on welfare for five or more years, children born out of wedlock, mothers with low-birth-weight babies, children living in poverty, children in the bottom decile of IQ, and percent of people scoring “Yes” on the MCV index were plotted for each decile of IQ with the cumulative percentage function also drawn. Most of the cumulative percentage functions are negatively accelerated monotonic functions. This means that the largest percentages were in the lowest decile of IQ and that the percentages decreased with increasing deciles.

Part IV: Living Together

In this final section of the book, Herrnstein and Murray attempt to outline the relevance of cognitive ability to understanding some major domestic issues in America today. In particular, the implications of cognitive ability for education and affirmative action are discussed.

In Chapter 17, “Raising Cognitive Ability,” Herrnstein and Murray review the record of attempts to raise cognitive ability through environmental improvements. “Taken together, the story of attempts to raise intelligence is one

of high hopes, flamboyant claims, and disappointing results" (p. 389). Attempts to raise cognitive ability through nutrition have shown that vitamin and mineral supplements may produce increases in scores on nonverbal subtests. However, as Herrnstein and Murray point out, this finding should be regarded with caution as many variations of successful studies failed to replicate the effect on IQ. Most attempts to raise cognitive ability have focused on improvements in education. Of such attempts, Herrnstein and Murray conclude that "although they make some differences in IQ, the size of the effect is small" (p. 394). Studies of natural variation in quality of education support this conclusion. The Coleman report concluded that "variations in teacher credentials, per pupil expenditures, and other objective factors in public schools do not account for much of the variation in cognitive abilities of American school children" (p. 395). Compensatory education programs designed to improve the cognitive functioning of disadvantaged students generally produced no effect of narrowing the gap of cognitive ability. According to Herrnstein and Murray, evidence of interventions that produce measurable improvements in IQ comes from two sources. A controlled experiment in Venezuela in which additional lessons were given to students in an experimental group over a period of a year increased their IQ scores between 1.6 and 6.5 points compared with a control group. Second, studies of the effects of commercial coaching for the SAT show a relationship between hours of study and increases in the SAT Math and Verbal scores. In sum, Herrnstein and Murray offer that "as of now, the goal of raising intelligence among school-age children more than modestly, and doing so consistently remains out of reach" (p. 402).

Preschool programs designed to raise cognitive ability such as Head Start produce short-term increases in cognitive ability that fade out over time. A naturalistic intervention that has shown promise for raising cognitive ability is "adoption out of a bad environment into a good one" (p. 410). Herrnstein and Murray review two studies that suggest that adoption from low SES to high SES homes produces a 12-point gain in IQ. In conclusion, the authors advocate good nutrition for all children, that Head Start programs be recognized for "rescuing small children from unsuitable, joyless, and dangerous environments" (p. 415), and that "the school is not a promising place to try to raise intelligence or to reduce intellectual differences" (p. 415). Advances in the endeavor to raise intelligence must await new insights about the development of cognitive ability.

In Chapter 18, "The Leveling of American Education," Herrnstein and Murray propose that the problem with American education is reflected in the declining SAT scores among the most gifted students. The educational system has been "dumbed down" to meet the needs of average and below average students, but as a result the potential of the most gifted students remains undeveloped. Yet society depends on the skills of those in the top level of cognitive ability to "create its jobs, expand its technologies, cure its sick, teach in its universities, administer its cultural and political and legal institutions" (p. 418).

Herrnstein and Murray begin by showing that the common perception that the academic performance of the *average* student is much worse today is not substantiated by longitudinal measures of academic achievement. However,

for the pool of youths in the top 10-20% of cognitive ability the opposite is true. SAT scores declined markedly from 1963 to 1980. The explanation most commonly offered for this decline is an expansion of the pool of students taking the test to include students who previously did not consider going to college. According to Herrnstein and Murray, this commonly held explanation is mistaken. As evidence the authors point out that "throughout most of the white SAT score decline, the white SAT pool was shrinking, not expanding" (p. 426). Instead, the authors suggest that the decline reflects "a downward trend of the educational skills of America's most academically promising youngsters toward those of the average student" (p. 427). Further analysis of the SAT scores of the most gifted youths reveals that the number of youths scoring 700 or higher on the Verbal SAT decreased by 41% from 1972 to 1993. Math scores rebounded from the decline with an increase in the proportion of 17-year-olds scoring 700 or more during the 1980s.

Herrnstein and Murray suggest that the decline in the 1960s reflects a "dumbing down" of education.

One of the chief effects of the educational reforms of the 1960s was to dumb down elementary and secondary education as a whole, making just about everything easier for the average student and easing the demands on the gifted student. (p. 430)

Traditional criteria of rigor and excellence gave way to "the need to minimize racial differences in performance measures, and enthusiasm for fostering self-esteem independent of performance" (p. 432). Other forces that eroded verbal skills were television replacing newsprint as a source of news and information and the telephone replacing letterwriting as the major form of communication. Math scores were less susceptible to these pressures than were verbal scores. Dilution of the curriculum benefited the mediocre student, but depressed the development of the intellectual skills of the talented student.

In concluding this chapter Herrnstein and Murray suggest that "critics of American education must come to terms with the reality that in a universal education system, many students will not reach the level of education that most people view as basic" (p. 436). One tendency is to blame students who do not work hard enough for the shortcomings of the educational system. However, the authors suggest two reasons why students are less to blame for not working harder. One is that "most American parents do not want drastic increases in the academic workload" (p. 437) and the second is that "the average American student has little incentive to work harder than he already does in high school" (p. 437). With respect to government interventions, Herrnstein and Murray recommend that "the federal government should actively support programs that enable all parents, not just affluent ones, to choose the school that their children attend" (p. 440), that the government should establish a federal scholarship program for students earning the top scores on standardized tests of academic achievement, and the government should "reallocate some portion of existing elementary and secondary school federal aid away from programs for the disadvantaged to programs for the gifted" (pp. 441-442). Finally, Herrnstein and Murray recommend the resurrection of the classical idea of the educated person.

To be an educated person must mean to have mastered a core of history, literature, arts, ethics, and the sciences and, in the process of learning those disciplines, to have been trained to weigh, analyze, and evaluate according to exacting standards. (p. 444)

In the next chapter, "Affirmative Action in Higher Education," Herrnstein and Murray provide an overview of affirmative action in practice and argue that "current practice is out of keeping with the rationale for affirmative action" (p. 451). In general, most people agree that affirmative action in education is needed, but differ when asked to say what they mean by it. The authors offer the following definition: "perfectly practiced, affirmative action means assigning a premium, an edge, to group membership in addition to the individual measures before making a final assessment that chooses some people over others" (p. 450).

Herrnstein and Murray examine the magnitude of this edge in SAT scores for blacks, whites, and Asians at 16 of 20 top-rated universities. The median difference between the white and black means was 180 SAT points whereas the median difference between the Asian and white means was 30 SAT points. On the LSAT, the differences between the white mean and the means for blacks, Latinos, and Asian were -1.49 , -1.01 , and -0.32 standard deviations respectively. Differences of similar magnitude were found for MCAT and GRE scores.

To answer the question of whether these differences that reflect affirmative action in practice are good or bad, Herrnstein and Murray examine the logic of college admissions. "College admission is not, has never been, nor is there reason to think that it should be, a competition based purely on academic merit" (p. 459). Rationales for affirmative action in the admissions process fall into the categories of institutional benefit, social utility, and just deserts. Institutional benefit refers to the rationale to admit students from racial and ethnic minorities to enrich the campus by adding to its diversity (p. 459). Social utility refers to the rationale to admit minority youths to increase minority representation at higher socioeconomic and professional levels, so that in the future it will be easier for minorities to pursue such professions. Just deserts refers to taking into account how well an applicant has done given the environment that it was accomplished in.

The applicant who overcame poverty, cultural disadvantages, an unsettled home life, a prolonged illness, or a chronic disability to do as well as he did in high school will get a tip from most admissions committees, even if he is not doing as well academically as the applicants usually accepted. (p. 461)

To examine how these rationales would operate in theory in a selection process, Herrnstein and Murray set up a table for deciding between a white candidate and a minority candidate with SES for each candidate either low or high. For the decision between a high SES white and a low SES minority, the rationales favor assigning a large preference for the minority candidate. For the case of a high SES white and a high SES minority candidate, the just deserts and social utility rationales are in opposition, but a small preference is assigned to the minority. For the decision between a low SES minority and a low SES white candidate, the rationales favor both candidates; therefore, little to no premium is given to the minority candidate. For the case of the high SES minority over

the low SES white candidate, social utility favors both, but just deserts favor the white candidate so a modest premium is assigned to the white candidate. Using the NLSY, the authors show that for affirmative action in practice, the differences in cognitive ability in standard deviation units between a black candidate and a white candidate for the four cells described above were +1.25, +.91, +1.17, and +.58, respectively. In each case, the analysis indicates a large edge in cognitive ability is given to the minority candidate. To the reader, Herrnstein and Murray ask in a properly run system of affirmative action, "How big an edge is appropriate?" (p. 467).

Another consideration is the cost of affirmative action. "How much harm is done to minority self-esteem, to white perceptions of minorities, and ultimately to ethnic relations by a system that puts academically less able minority students side by side with students who are more able?" (p. 470). Students commonly observe the racial mix of the student population, students who stand out because they seem out of place in college, and students who stand out because they are especially smart (p. 471). Minority students may stand out due to poor academic performance. Dropout rates from college by black students are twice the rate for whites. "Getting discouraged about one's capacity to compete in an environment may be another cost of affirmative action" (p. 473). Growing racial animosity on campuses may be yet another cost. In conclusion, Herrnstein and Murray advocate a return to the original conception of affirmative action: "to cast a wider net, to give preference to members of disadvantaged groups, whatever their skin color, when qualifications are similar" (p. 448).

In Chapter 20, "Affirmative Action in the Workplace," Herrnstein and Murray evaluate the impact of affirmative action legislation on the workplace. The authors state that job discrimination legislation was developed based on

the assumptions that (1) tests of general cognitive ability are not a good way of picking employees, (2) the best tests are ones that measure specific job skills, (3) tests are biased against blacks and other minorities, and (4) all groups have equal distributions of cognitive ability. (p. 483)

Herrnstein and Murray state that although these assumptions were defensible back in the 1960s, today it is well established that tests of cognitive ability are related to job productivity, that these tests have more predictive power than grades, education, or a job interview; that this predictive power arises from their measure of general cognitive ability rather than specific skills, that these tests are not biased against blacks, and that different ethnic groups have different distributions of cognitive ability (pp. 483-484). The authors recommend that "the government should scrap the invalid scientific assumptions that undergird policy and express policy in terms that are empirically defensible" (p. 484).

Next Herrnstein and Murray evaluate the effects of affirmative action in the workplace without and with controlling for cognitive ability. Without controlling for IQ, there has been an increasing trend in the percentage of blacks employed in clerical, professional, and technical jobs from 1960 to 1990. No trend shows an effect of the antidiscrimination law on hiring and promotions. When the same trend lines are adjusted for the known difference in IQ between blacks and whites, the trend lines show that in both clerical and professional

and technical positions, for individuals in the same IQ range, blacks were being hired at higher rates than whites since the 1960s with both trends increasing into the 1980s. Herrnstein and Murray suggest that when adjusted for IQ, evidence for the impact of affirmative action becomes apparent. In the 1950s, blacks were systematically and unjustly excluded from these occupations. In the mid 1960s the underrepresentation of blacks in technical and professional occupations disappeared, and since the 1960s the representation of blacks in these professions has gone beyond parity (pp. 491-492).

In conclusion, Herrnstein and Murray advocate that the goal of an affirmative action policy should be equality of opportunity rather than equality of outcome. Furthermore, they state that

if the quality of performance fairly differs among individuals, it may fairly differ among groups. If a disproportion is fair, then “correcting” it—making it proportional—may produce unfairness along with equal representation. We believe that is what happened in the case of current forms of affirmative action. (p. 501)

From this point, Herrnstein and Murray offer four policy alternatives that they think will produce fair treatment in hiring and promotions. One alternative is to create tests that meet the current requirements but still predict job performance. The problem with this alternative is that the relation of general ability to job performance will produce disparate impacts across groups. A second alternative is to allow employers to use educational credentials to narrow the pool of qualified applicants. The problem with this approach is that equivalent degrees do not mean equivalent cognitive ability due to affirmative action in universities. The third alternative is to produce norms for each group. Scores would be converted to percentiles based on the distribution for each group and employers could hire top down from each distribution. According to the authors, race norming was used in the early 1980s but was outlawed in 1986. Finally, the fourth proposal, which is favored by the authors, is based on the proposition that “if tomorrow all job discrimination regulations based on group proportions were rescinded, the United States would have a job market that is ethically fairer, more conducive to racial harmony, and economically more productive, than the one we have now” (p. 505). As with education, Herrnstein and Murray advocate that the government “get rid of preferential affirmative action and return to the original conception of casting a wider net and leaning over backward to make sure that all minority applicants have a fair shot at the job or the promotion” (p. 505).

In the next chapter, entitled “The Way We Are Headed,” Herrnstein and Murray predict a pessimistic future for American society based on the following trends “an increasingly isolated cognitive elite, a merging of the cognitive elite with the affluent, a deteriorating quality of life for people at the bottom end of the cognitive ability distribution” (p. 509). Throughout this century, American society has been transformed into a society stratified by cognitive ability. The cognitive elite has grown to become a new class of individuals in high IQ occupations that has displaced previous socioeconomic elites. The authors state that “the invisible migration of the twentieth century has done much more than let the most intellectually able succeed more easily. It has also segregated them and socialized them” (p. 513). Furthermore, the very bright have become more affluent and the affluent increasingly comprise the very

bright, which has led to a blending of the interests of the affluent and the cognitive elite (p. 515). According to the authors, this will lead to what Robert Reich has referred to as a "secession of the successful" (p. 517). A scenario is presented where 10-20% of the population are wealthy enough to bypass social institutions that they do not agree with and to constitute a political bloc with considerable clout. Herrnstein and Murray suggest that this new coalition of the affluent and the intelligent will fear the growing underclass in American society.

For the underclass, the future predicted by the authors is grim.

People in the bottom quartile of intelligence are becoming not just increasingly expendable in economic terms; they will sometime in the not-too-distant future become a net drag. In economic terms and barring a profound change in direction for our society, many people will be unable to perform that function so basic to human dignity: putting more into the world than they take out. (p. 520)

As the illegitimacy rate among whites increases, a white underclass will emerge that will be subject to much the same fear and resentment from the cognitive elite that the black underclass experiences. Meanwhile, the outmigration of the ablest blacks from the black inner city will lead to an increasing concentration of blacks with limited cognitive ability and the attendant social problems (p. 522).

Finally, Herrnstein and Murray foresee that "the cognitive elite, with its commanding position, will implement an expanded welfare state for the underclass that also keeps it out from underfoot" (p. 523). Some of the features of that welfare state will be "child care in the inner city will become primarily the responsibility of the state" (p. 523), "the homeless will vanish" (p. 523), "strict policing and custodial responses to crime will become more acceptable and widespread" (p. 524), "the underclass will become even more concentrated spatially than it is today" (p. 524), "the underclass will grow" (p. 525), "social budgets and measures for social control will become still more centralized" (p. 525), and "racism will reemerge in a new and more virulent form" (p. 525). To avoid this future, Herrnstein and Murray recommend that the issues of a society increasingly dominated by a cognitive elite and a growing underclass need to be addressed now.

The final chapter of the book is entitled "A Place for Everyone." Herrnstein and Murray state that "our central concern since we began writing this book is how people might live together in harmony despite fundamental individual differences" (p. 528). To achieve this goal, the authors advocate a return to the original conception of human equality and the pursuit of happiness. The original conception of equality of rights that arose from the philosophies of Hobbes and Locke is not seen as synonymous with the assumption that "individuals are both equal and empty, a blank slate to be written upon by the environment" (p. 529). "They are equal in rights, Locke proclaimed, though they be unequal in all other things" (p. 530). Furthermore, the authors argue that this original conception of equal rights was what the Founders of America espoused. "The Founders saw that making a stable and just government was difficult precisely because men were unequal in every respect except their right to advance their own interests" (p. 531). In contrast, contemporary political theory works with a conception of equality that seeks to suppress social and

economic inequalities that result when people are free to behave differently (p. 532).

Herrnstein and Murray suggest that for society to come to terms with the realities that people differ in intelligence and that intelligence bears on how well people do in life, it should operate in such a manner so as to allow individuals throughout the range of cognitive ability to find valued places for themselves (p. 535). In the past,

when the responsibilities of marriage and parenthood were clear and uncompromising and when the stuff of community life had to be carried out by the neighborhood or it wouldn't get done, society was full of accessible valued places for people of a broad range of abilities. (pp. 537-538)

In this traditional context, it was easier for an individual with low cognitive ability to find a valued place. In the contemporary world, the increased costs of the valued roles of spouse, parent, and neighbor as well as the stripping of traditional functions from the neighborhood and the community has made it increasingly more difficult for individuals of modest cognitive ability to find valued places in society (p. 538). From this observation, Herrnstein and Murray propose that "a wide range of social functions should be restored to the neighborhood when possible and otherwise to the municipality" (p. 540) in order to increase the valued places that people can fill.

The second set of policy prescriptions advocated by Herrnstein and Murray involve a simplification of rules generated by the cognitive elite that make life more difficult for everyone else (p. 541). "As the cognitive elite busily goes about making the world a better place, it is not so important to them that they are complicating ordinary lives" (p. 541). Such complexity serves as a barrier to people who are not cognitively equipped to struggle through the bureaucracy and, according to Herrnstein and Murray, should be removed. Another prescription concerns making the justice system simpler so that the rules about crime and the consequences for crime are simpler.

The number of acts defined as crimes has multiplied, so that many things that are crimes are not nearly as obviously "wrong" as something like robbery or assault. The link between moral transgression and committing crime is made harder to understand. (p. 543)

Such simplification will make living a moral life simpler for persons of lower cognitive ability. For marriage, Herrnstein and Murray argue that the sexual revolution and the state have made it "much more difficult for a person of low cognitive ability to figure out why marriage is a good thing, and, once in a marriage, more difficult to figure out why one should stick with it through bad times" (p. 544). As a policy prescription, Herrnstein and Murray advocate returning marriage to its historic legal status to restore the rewards of marriage by validating the rewards that marriage naturally carries with it (p. 546).

Herrnstein and Murray conclude the book with the following words:

Cognitive partitioning will continue. It cannot be stopped, because the forces driving it cannot be stopped. But America can choose to preserve a society in which every citizen has access to the central satisfaction of life. Its people can, through an interweaving of choice and responsibility, create valued places for themselves in their worlds. They can live in communities—urban or rural—

where being a good parent, a good neighbor, and a good friend will give their lives purpose and meaning. They can weave the most crucial safety nets together, so that their mistakes and misfortunes are mitigated and withstood with a little help from their friends.

All of these good things are available now to those who are smart enough or rich enough—if they can exploit the complex rules to their advantage, buy their way out of social institutions that no longer function, and have access to the rich human interconnections that are growing, not diminishing, for the cognitively fortunate. We are calling upon our readers, so heavily concentrated among those who fit that description, to recognize the ways in which public policy has come to deny those good things to those who are not smart enough and rich enough.

At the heart of our thought is the quest for human dignity. The central measure of success for this government, as for any other, is to permit people to live lives of dignity—not to give them dignity, for that is not in any government's power, but to make it accessible to all. That is one way of thinking about what the Founders had in mind when they proclaimed, as a truth self-evident, that all men are created equal. That is what we have in mind when we talk about valued places for everyone. (p. 551)

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Increasing the Raw Intelligence of a Nation is Constrained by Ignorance, Not its Citizens' Genes

In The Bell Curve, Herrnstein and Murray claim that a high value for heritability of intelligence limits or constrains the extent to which intelligence can be increased by changing the environment. This article argues that the concept of heritability is based on unsupportable assumptions and that its numerical value places no constraint on the consequences of an improved environment. On the contrary, a very small change in environment, such as a dietary supplement, can lead to a major change in mental development, provided the change is appropriate to the specific kind of deficit that in the past has impaired development. The results of adoption studies and the intergenerational cohort effect also reveal that intelligence can be increased substantially without the need for heroic intervention.

The Bell Curve by Herrnstein and Murray (1994) addresses what they and many politicians perceive as a crisis in the United States brought about by wrong-headed government policies, policies they claim have resulted in "disaster," and they urge that government leaders should "try living with inequality" rather than striving to eradicate it. They believe that many people lack sufficient intelligence to be successful in American society, and they argue that an important part of their inability to compete successfully arises from inadequate genes.

Even before it appeared in retail stores, the book was prominently publicized in the mass media as offering important insights about genetic causes of low intelligence and poverty. The October 16, 1994 issue of the *New York Times Book Review* featured *The Bell Curve* with a cover picture of a DNA double helix and the question "How much of us is in the genes?" Inside was a sympathetic review (Browne, 1994) emphasizing "ineradicable cognitive disability created by genetic bad luck" (p. 3). Although data in the book are almost exclusively concerned with the United States and the obsession with race is a peculiarly American trait, *The Bell Curve* was given major, albeit more critical, attention in national Canadian media (Bruning, 1994; Campbell, 1994). After a remarkably short delay, multiauthored, book-length discussions of *The Bell Curve* went on sale (Fraser, 1995; Jacoby & Glauberman, 1995). Herrnstein and Murray wrote a deliberately provocative book and in this respect they succeeded marvelously. Vast numbers of intellectuals in Canada and the US have set aside their work for a while and occupied their minds with genes and psychological testing. Although the book was not written to advance scientific knowledge and will not have much appeal for those in the biological sciences

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in particular, it has become necessary for many of us to examine it in some detail because of persistent questions about it from colleagues and journalists.

As a specialist in behavioral and neural genetics, I focused on those chapters involving claims about heredity and inequality. Herrnstein specialized in the study of learning in rats and pigeons, whereas Murray is a political scientist. Herrnstein and Murray are obviously not geneticists: they are writing for an audience that knows little about genetics, and their readers will not gain a better understanding of genetic principles from reading their book. On the contrary, diligent readers who try to follow their reasoning will probably become confused and misled about the role of genes and the root causes of social problems.

Herrnstein and Murray claim that statistical methods can reveal with reasonable accuracy the percentage of individual variation in intelligence that is caused by genetic differences among people, and they conclude that the “most unambiguous direct estimate” indicates this percentage is about 60-70%. They do not mention that this methodology presumes the effects of genes and environment occur separately during development and combine by simple arithmetical summation, or that this presumption has been rejected as biologically unrealistic by many geneticists (Gottlieb, 1992; Lewontin, 1974; McGuire & Hirsch, 1977; Wahlsten, 1990, 1994). They claim that high “heritability” of IQ means that improving the environment of a poor child a modest amount will be ineffective because “such changes are limited in their potential consequences when heritability so constrains the limits of environmental effects” (p. 109).

The Bell Curve is simply wrong on this point. A heritability estimate does not in any way constrain the effects of a moderately changed environment. Small treatments tend to have small effects unless the treatments directly and precisely ameliorate a specific difficulty that impairs development. If such a specific difficulty can be identified, a very small change in the environment can lead to a dramatic improvement. For example, during the first few decades of the 20th century, pellagra was quite common among the working poor of the southern US. The eugenicist Davenport claimed the slow learning and health problems of pellagrins resulted from an infection combined with bad genes, while the experimental *proof* by the physician Goldberger that it was a vitamin deficiency disease caused by low wages leading to a poor diet was ignored (Chase, 1977). Now we know that a small daily dose of the vitamin niacin can effectively prevent pellagra, just as vitamin C prevents scurvy and low phenylalanine milk prevents symptoms of the genetic disease phenylketonuria (PKU). Sweeping statements about the ineffectiveness of environmental change denote helplessness and pessimism occasioned by ignorance rather than any inherent resistance of intelligence to modification. Each of the 50,000 or more genes in the human chromosomes functions in a highly specific way as part of the biochemical system of a cell, and genetic knowledge can help to devise effective treatments only when a specific gene that impairs development is known. Bereft of genuine genetic knowledge, the kind of pseudogenetic heritability estimates espoused by Herrnstein and Murray serve as a weapon against the poor in the propaganda arsenal of reactionary politicians.

The Bell Curve asserts confidently that “Changing cognitive ability through environmental intervention has proved to be extraordinarily difficult” (p. 314).

This is false. Available data indicate that a modest, short term improvement such as the Head Start project in the US has correspondingly small effects on mental ability test scores, whereas a large and lasting improvement produced by adoption can exert quite a large effect. Well-controlled studies done in France have found that transferring an infant from a family having low socioeconomic status (SES) to a home where parents have high SES improves childhood IQ scores by 12 to 16 points or about one standard deviation (Capron & Duyme, 1991; Schiff, Duyme, Dumaret, & Tomkiewicz, 1982; see Figure 1), which is considered a large effect size in psychological research (Cohen, 1988). Adoption can entail a major improvement in a child’s environment, but the adoptive home is usually not off the scale of decent environments and therefore is not expected to yield a rich harvest of superior intellects. Achieving extraordinarily high levels of performance requires exceptional effort under the tutelage of expert instructors (Ericsson, Krampe, & Tesch-Römer, 1993; Wagner & Oliver, in press). Outstanding achievement and brilliant creativity do not come “naturally” to anyone merely because of their genes.

Changing mental ability test scores a modest amount is not so difficult. In fact, routine IQ testing reveals this commonly happens without deliberate intervention to enhance intelligence per se. The extent of this phenomenon

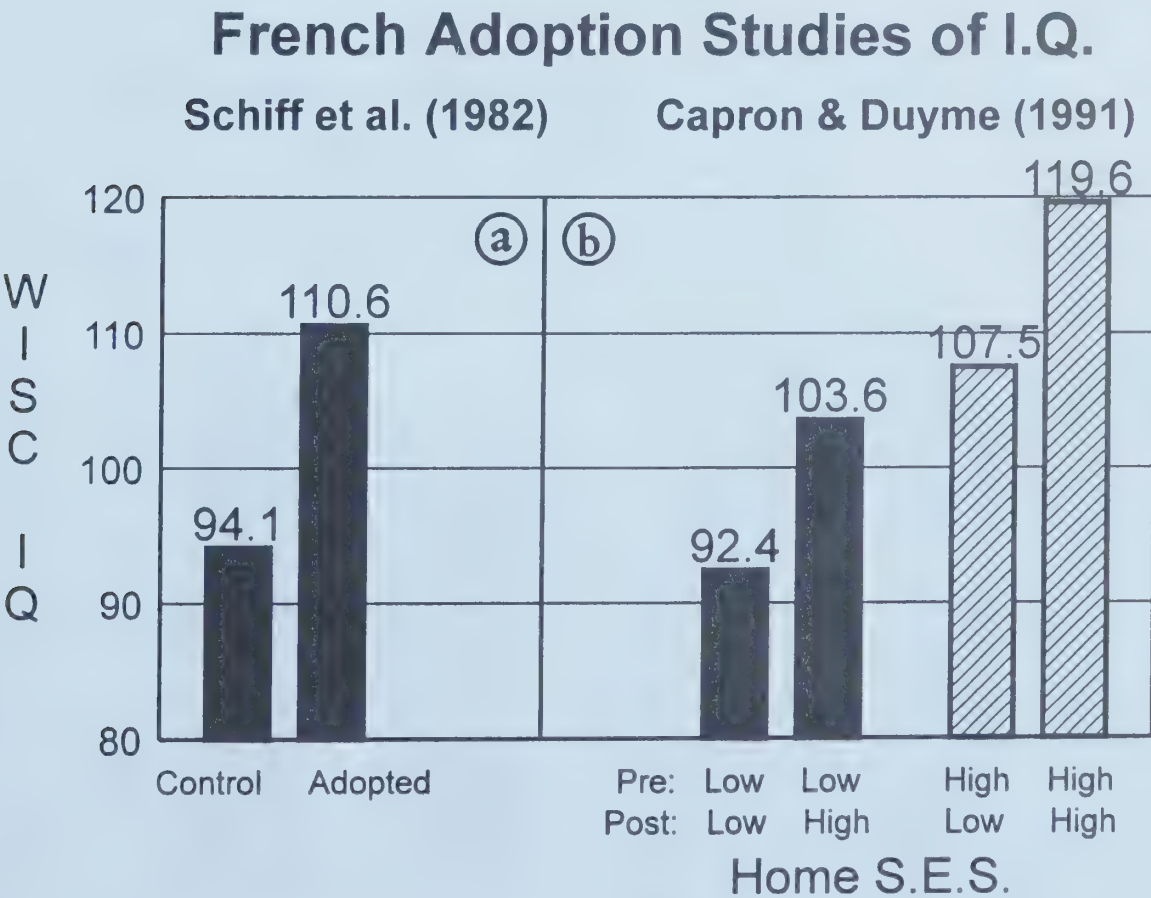


Figure 1. Mean WISC IQ score for children in two adoption studies done in France. (a) Schiff et al. (1982) compared two groups of children having the same biological mother and similar biological fathers. One group had been adopted into homes of well-educated professionals, whereas the control children had remained with the mother living in poverty. (b) Capron and Duyme (1991) tested children from four conditions categorized according to parental socioeconomic status (SES) prior to and after adoption.

tends to be obscured by the method of scoring the tests. The average IQ in a population should be about 100 and the standard deviation should be about 15, such that about 98% of people at the same age will score between 70 and 130 IQ points. One mechanism for scaling an IQ test is simple. The test is given in a particular year to a representative random sample of the population, and the numbers of items correct have mean and standard deviation of M and S , respectively. Then each raw score X is converted to a standard score Z that represents the number of standard deviations from the mean for the individual, using $Z=(X-M)/S$. The Z scores have a mean of 0 and standard deviation of 1. Finally, the Z scores are transformed to IQ scores with the formula $IQ=100+Z(15)$. Thus IQ indicates relative performance on a test rather than absolute degree of intelligence. Over a period of several years it becomes necessary to restandardize the IQ test using more appropriate test items and a new sample of the population. This periodic restandardization of a test tends to keep the mean IQ close to 100, even if the underlying trait called intelligence is changing substantially in the population.

An immense body of evidence reveals that raw, unstandardized intelligence has been gradually increasing for several decades since World War II in many industrialized countries including Canada (Flynn, 1987). Two kinds of data show this trend clearly. Perhaps the most persuasive comes from the

Ravens "IQ" in The Netherlands

Source: Flynn (1987)

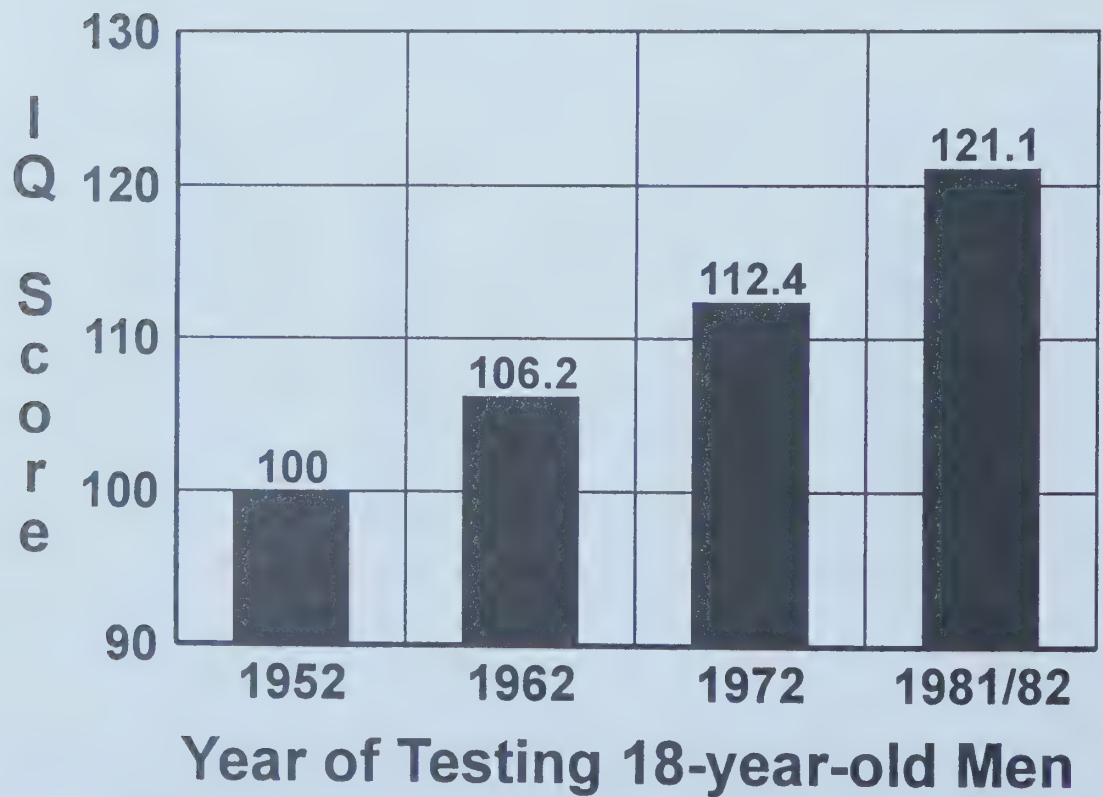


Figure 2. Mean Raven's Progressive Matrices scores converted to IQ scores for 18-year-old men in the Netherlands who were tested at the time of military induction in different years. Based on data in Table 1 of Flynn (1987).

Netherlands, an ethnically homogenous country, where almost all 18-year-old males are given the Raven’s Progressive Matrices test as part of military induction. The test itself has not been modified for several decades. As shown in Figure 2, there is a very large *cohort effect* amounting to 21 IQ points increase in the population over three decades.

The other kind of evidence derives from the restandardization procedure when people given the new version of a test then take the old version so that validity can be assessed. For example, when the Wechsler Intelligence Scale for Children (WISC) was revised in 1972, the sample of children scored 7 points higher on the previous version of the WISC that had been standardized in 1947. Combining these kinds of data for several IQ tests, a one-standard-deviation increase in mean intelligence in the US is apparent over several decades (Figure 3). The cohort effect is gradual and almost linear since World War II, but in terms of a population-wide change in intelligence manifested in one generation of Americans, it is a large effect. It is especially thought-provoking that the size of the cohort effect is not much different than the widely publicized black-white IQ difference in the US. That is, more recently born children exceed the raw intelligence of their own parents at a comparable age by almost the same average amount as Americans of European ancestry exceed Americans of African ancestry, especially on more recent tests of mental ability.

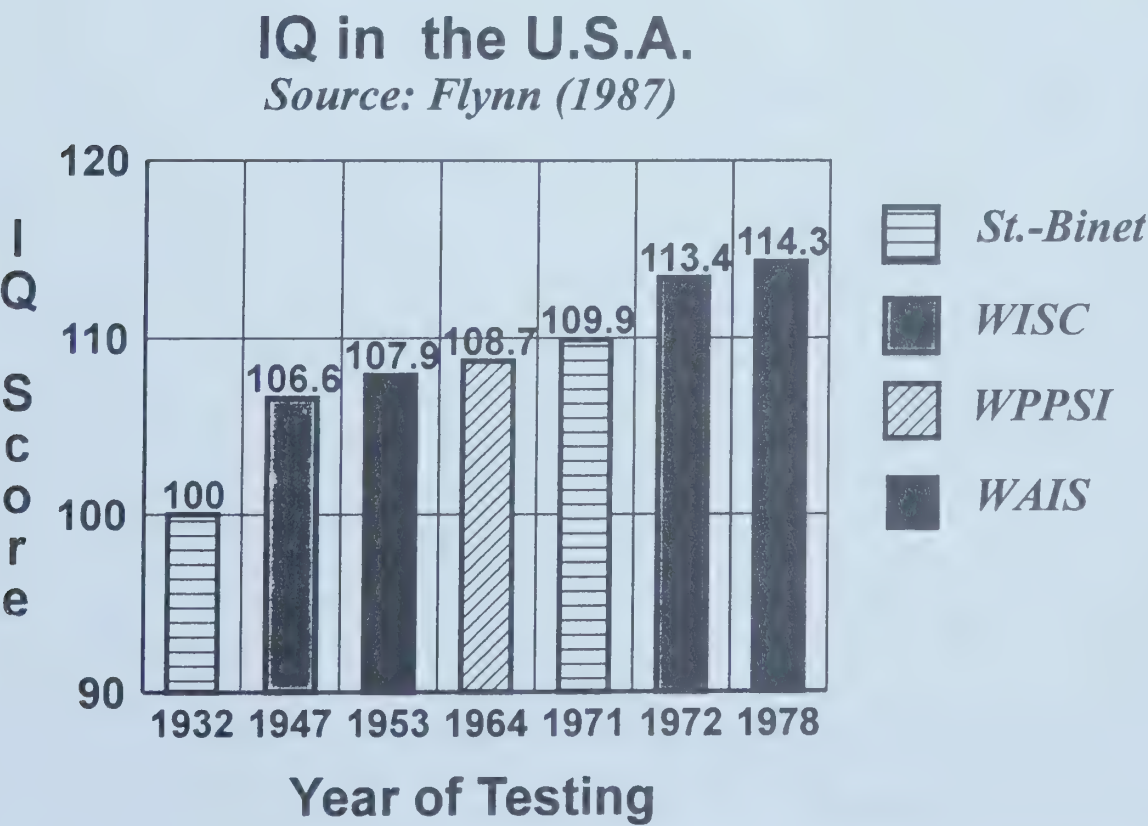


Figure 3. Mean IQ scores of standardization samples for four IQ tests given to Americans of European ancestry in various years. In each case two or more of the tests were taken by the same people in the same year, and averages were expressed in terms of the base score of 100 on the Stanford-Binet in 1932. Abbreviations: St.-Binet, Stanford-Binet; WISC, Wechsler Intelligence Scale for Children; WAIS, Wechsler Adult Intelligence Scale; WPPSI, Wechsler Preschool and Primary Scale of Intelligence. Based on data in Table 7 of Flynn (1987).

Herrnstein and Murray mention the cohort effect in their discussion of group differences, but they lightly dismiss it as a mere improvement in “test taking” skills or betterment of the living conditions of the disadvantaged. They muse that “one does not get the impression that the top of the IQ distribution is filled with more subtle, insightful, or powerful intellects than it was in our grandparents’ day” (p. 308). Thus, faced with weighty evidence against their thesis, they are willing to dismiss the cohort effect with counter-arguments that negate some of their own fundamental claims. If the cohort effect represents improvement by only the bottom half of the “bell curve” rather than the entire population, then their earlier claim that increasing IQ is extraordinarily difficult loses credibility. After all, if the population mean increases by 15 points but the top part of the distribution does not increase, the lower scores must have increased by much more than 15 points. Herrnstein and Murray maintain assiduously in the first half of their book that IQ tests as we know them are very good measures of general intelligence. Yet the cohort effect causes them to revert to subjective impressions about their grandparents who must have been children when the IQ test was still embryonic in the mind of Alfred Binet. Actual experience in the US with the earliest administrations of IQ tests revealed that many men at the apex of American society were none too heavy under the helmet. The December 29, 1915 issue of the *Chicago Herald* trumpeted to its public: “Hear how Binet-Simon method classed mayor and other officials as morons” (Chase, 1977, p. 241). As for outstanding intellects, without doubt they are products of their times and countries, but their achievements do not provide a valid measure of the intelligence of their lesser countrymen, who all too often failed to recognize genius in their midst, partly because of the prevailing political and social definition of genius (Weisberg, 1986). Formal IQ tests were intended to supplant subjective impression and common prejudice with carefully constructed instruments administered in a controlled conditions. For Herrnstein and Murray to tiptoe around the cohort effect by suggesting that IQ tests do not *really* measure *genuine* intelligence but something more superficial and transitory is a negation of a fundamental part of the thesis of *The Bell Curve*.

The cohort effect poses an even greater challenge to the *raison d’être* of *The Bell Curve*. Herrnstein and Murray raise the alarm about several worrisome social trends in the US and argue that inadequate intelligence is the root cause of most social problems. They present striking graphs of social statistics over several decades that reveal a dramatic deterioration in American society, especially from 1960 to 1990. Over this period, we are told that the marriage rate has declined while the divorce rate has increased from 7% to 20% and “illegitimate” births have increased from 5% to 30%, welfare caseloads have risen from 1.5% to 7%, and the rate of violent crimes is now five times higher than three decades ago. Nevertheless, the raw intelligence of American youth has apparently increased a substantial amount over this same interval. A national decline in intelligence could not possibly be the basis for these negative social trends.

The primary evidence Herrnstein and Murray offer for the important influence of individual intelligence in American society is a series of positive correlations between IQ and variables such as success in school, work, and social life. Correlations are notoriously poor guides to the direction of causal

influences even when multiple regression methods are used, and this kind of information cannot distinguish between socioeconomic causes of low or high intelligence and consequences that flow from differences in intelligence at any one time. Comparisons of groups of people living in changed environments, on the other hand, can reveal the direction of causation. Adoption from a low SES home into a high SES home is clearly a change in environment that precedes and causes the change in childhood IQ, presuming the theorist will admit that even the brightest infants lack the power to choose their parents. Likewise, the cohort effect implicates nationwide environmental change as the cause of enhanced childhood intelligence. This enhanced intelligence may then consolidate and build on past achievements as the youth mature and become productive, influential members of society.

In my opinion, *The Bell Curve* from beginning to end suffers from a lack of intellectual rigor and a rather cavalier use of data mustered from here and there to bolster an obvious political agenda. The authors are worried about the growing gap between the rich and the poor in the US and the apparent disintegration of American society, and they offer some suggestions for policies that make sense from the perspective of the psychology of animal learning, Herrnstein's specialty. When they invoke genetic explanations for class and racial differences in educational and occupational achievement, however, they enter a realm where their incompetence is painfully evident (Kamin, 1995). Herrnstein, Murray, and their publicists still do not understand that genetic phenomena cannot be the root causes of short-term social trends. These socioeconomic trends are rooted in the political and economic system that prevails in the US. Moral decay does not arise from a sudden, inexplicable epidemic of genetic mutations. The obsession of so many social scientists and journalists with genetic victim blaming serves to divert attention from the real causes and cures of social ills. *The Bell Curve* itself and the attention lavished on it are symptoms of social malaise in the US.

As a final example of this malaise manifest in academic circles, consider the attempt by Herrnstein and Murray to deny the accusations of fraud against British psychologist Cyril Burt, who is widely recognized as the author of fictitious data and articles purporting to show high heritability of IQ (Hearnshaw, 1979). In a box on page 12, Herrnstein and Murray cite books by Joynson and Fletcher claiming to show that accusations against Burt are groundless. What Herrnstein and Murray fail to mention is an authoritative, peer reviewed critique by Samelson (1992) of these books that finds the accusations against Burt well substantiated and the work of his defenders shoddy and one-sided. Samelson concludes:

What does this whole affair tell us about so-called science and scientists, insiders and outsiders, power structures and establishment climates in a profession, about "experts" whose beliefs flipflop from one side to the other, about presumably responsible editors, and finally about "quality control"? Beyond some pious words about them, we do not appear to have made much progress on these issues. (p. 231)

In this respect *The Bell Curve* is a step backward rather than a benchmark of progress in the nature-nurture debate.

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The Bell Curve on Separated Twins

The Bell Curve declares that studies of separated identical twins—characterized as the “purest” of the “direct” methods available for estimating IQ heritability in the American population—point to a value between $+.75$ and $+.80$. This makes Herrnstein and Murray’s working, “middle-ground” estimate of $+.6 \pm .2$ seem conservative. In fact, however, the authors of the main study cited by Herrnstein and Murray suggest a heritability of only “two-thirds” for a population restricted to the “broad middle-class.” Herrnstein and Murray completely omit to mention the numerous complicating factors in all reputable separated twin studies conducted to date that have rendered them significantly less than pure, and that have inevitably inflated the observed IQ correlations. The Bell Curve’s overall treatment of twin studies is inaccurate and misleading.

This commentary focuses on a relatively small but significant detail from *The Bell Curve*: namely Herrnstein and Murray’s (1994) discussion of twin studies and their implications for estimating the heritability of intelligence. Of course, the assumption that intelligence is strongly heritable within the broad American population is one of the pillars on which the main weight of *The Bell Curve*’s main argument rests. The authors propose what they call a “middle-ground” (p. 298) heritability value of $.6 \pm .2$, a figure that they claim “does no violence to any of the competent and responsible recent estimates” (p. 108). Although lower and more approximate than the estimate of $.8 \pm .1$ proposed by Jensen in his controversial (1969) monograph (p. 65), Herrnstein and Murray’s figure still suggests a genetic factor that outweighs the combined influences of environment.

Among the small number of specific studies cited by Herrnstein and Murray to support their estimate, those involving twins are awarded special prominence. The authors distinguish between “direct” and “indirect” methods of assessing heritability, and declare:

The purest of the direct comparisons is based on identical (monozygotic, MZ) twins reared apart, often not knowing of each other’s existence.... The most modern study of identical twins reared in separate homes suggests a heritability for general intelligence between $.75$ and $.80$, a value near the top range found in the contemporary technical literature. (p. 107)

Because the most modern of the purest of the most direct estimates of heritability supposedly yields the highest values, Herrnstein and Murray’s “middle-ground” figure of $.6$ is made to seem quite conservative.

In fact, however, their description can be challenged on several counts, starting with a first-hand examination of the main study to which they refer.

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The Minnesota Study of Twins Reared Apart (Bouchard, Lykken, McGue, Segal, & Tellegen, 1990) reports raw intraclass IQ correlations of .69, .78, and .78 for 40-odd pairs of twins on what they designate, respectively, as Primary, Secondary, and Tertiary tests of intelligence. The study's authors, who scarcely can be accused of downplaying the influence of heredity in their overall interpretations, are nevertheless more conservative than Herrnstein and Murray in estimating heritability from these findings. They explicitly state that because very few of their twins had been reared "in real poverty or by illiterate parents," their estimate "should not be extrapolated to the extremes of environmental disadvantage still encountered in society." They conclude: "*In the current environments of the broad middle-class*, in industrialized societies, two-thirds of the observed variance of IQ can be traced to genetic variation" (Bouchard et al., 1990, p. 227, emphasis added). Not only is their "two-thirds" lower than the "between .75 and .80" proclaimed by Herrnstein and Murray, but it also is explicitly restricted to a "broad middle-class" population.

At places in *The Bell Curve* Herrnstein and Murray acknowledge that heritability coefficients pertain not to individuals, but to the variabilities of traits in specific populations, and explicitly note that heritabilities inevitably increase as populations become more environmentally homogeneous (pp. 106, 298). Clearly the main population with which they are concerned in their book extends from extreme to extreme of the range of socioeconomic status and is substantially more heterogeneous than the "broad middle-class" represented in the Minnesota study. Thus Herrnstein and Murray's claim that this key study points to a relevant heritability between .75 and .80, and thus defines the top end of their "competent and responsible" heritability estimates centering around .60, is mistaken and misleading.

Herrnstein and Murray's claim that separated-twin studies represent the "purest" of the direct measures of heritability is equally misleading. They do not even allude to the clear case made years ago by Kamin (1974) and Farber (1981), among others, that any separated-twin study can provide a "pure" estimate of heritability only to the extent that a number of important conditions have been met. The twin sample must be representative both of the general population whose heritability is to be estimated and of the subpopulation of all separated identical twins within that population. The twins must have been randomly placed in adoptive homes representing the full range of environmental advantage and deprivation. And the twins must have been reared truly separately, with no contact and ideally without any knowledge of each other's existence. Only to the extent to which these conditions have been met may the intraclass correlation between the adult twins' IQ scores (or any other measurable variable) provide a pure measure of heritability.

In fact, of course, a real study meeting these conditions might be done with fruit flies but not with human twins. Adoption agencies in real life inevitably and justifiably practice selective placement, and in the cases of twins make special efforts to keep them close to each other if not actually in the same household. Often they are placed in separate branches of the same family, with ample opportunities for contact. And of the small proportion of twins who have been truly and completely separated without knowledge of each other, only a few are likely to learn of each other's existence and identify themselves

for inclusion in a study. Those who do find out about each other usually do so via a common acquaintance who has remarked on their resemblance to each other.

In the late 1960s Cyril Burt's (1966) twin study briefly seemed the best in the literature because it included a table of the occupational levels of the adoptive parents for 53 separated pairs of identical twins indicating two things: The levels represented a full range from "Higher professional" to "Unskilled," and the intraclass correlation between the co-twins's adoptive parents' levels worked out to an astonishing $-.03$, indicating a virtually random placement (p. 143). Burt reported IQ correlations of $.771$ for "group tests," $.863$ for "individual tests," and $.874$ for "final assessments" (p. 146). Jensen (1969) gave this study particular emphasis when estimating IQ heritability at $.8$ (p. 52).

In the early 1970s, however, Kamin (1974) called attention to numerous deficiencies in Burt's report of his study. Crucial basic details were missing, including descriptions of the IQ tests employed, and even about the basic makeup of the sample (ages, sex of the twins, etc.). Unlike other major studies, Burt's included no detailed case reports on any of the twin pairs. Kamin further noted that as Burt had been periodically reporting on his study between 1943 and 1966 and the reported sample size increased from 15 to 21, to 42, and finally to 53 pairs in 1966, several of the reported IQ correlations remained constant to the second or even the third decimal place—a statistical coincidence far exceeding imaginable probability. Kamin concluded: "The numbers left behind by Professor Burt are simply not worthy of our current scientific attention" (p. 71). Jensen (1974) now conceded that Burt's data were "useless for hypothesis testing" (p. 24), and Burt's study has since been omitted from all serious discussions of the separated-twin data, including that by Bouchard et al. (1990).

Kamin (1974) went on to examine the three other major separated-twin studies published prior to 1974: Newman, Freeman, and Holzinger, (1937) had reported an IQ correlation of $.67$ for 19 separated twin pairs; Shields (1962) reported $.77$ for 37 pairs; and Juel-Nielson (1965) reported $.62$ for 12 pairs. In marked contrast to Burt's, these studies provided full information about all their twins, including not only the measures used to test them, but also details about their upbringing and their biological and adoptive families' backgrounds. Despite their interest, all these studies deviated significantly from the scientifically ideal model. The majority of twins had been placed in similar households (often separate branches of the same family) that had some degree (and often considerable) contact with each other as the twins grew up. Further, those twins who had been relatively most completely separated, and whose adoptive environments differed relatively most, showed the largest absolute differences in IQ: an unequivocal sign of environmental influence.

Farber (1981) carried this line of analysis farther, collating data from all 121 of the case studies of separated twins she could find in the professional literature (including the three studies cited above). Besides finding the pooled group unrepresentative of the general population (e.g., coming from biological families heavily skewed toward the lower end of the socioeconomic distribution), Farber (1981) reported:

Only three [sets of twins] are pure cases who were separated in the first year, reared with no knowledge of twinship, and seen [by their investigators] at the period of first meeting. In other words, *of the 121 cases reported in the last fifty years, only three are "twins reared apart" in the classic sense.* (p. 60, emphasis in original)

While acknowledging the problems involved in pooling data from different studies, Farber (1981) conducted tentative analyses of the combined IQ data that suggested that between 20 and 25% of the variance was attributable to "factors associated with mutual contact" between the twins. This variance, she noted, is generally "hidden in the 'genetic' side of [most published heritability] estimates" (p. 206). Taking into account the degrees of imperfect separation in different ways and with different subpopulations, Farber recalculated heritability estimates that ranged from .14 to .67 (pp. 206-207). The point here is not to suggest a specific heritability figure, but rather to stress that the incomplete separation of "separated" twins in the literature prior to 1981 clearly had some effect in enhancing their IQ correlations, rendering those correlations overestimates of heritability to some degree.

Obviously Herrnstein and Murray's blithe description of "twins reared apart, often not knowing of each other's existence" (p. 107) fails accurately to characterize the samples in twin studies conducted before 1981. But what of the Minnesota study on which they place such emphasis? Unfortunately it is impossible to answer with certainty, because that study is reported only in a six-page article that contains none of the detailed case reports necessary to make an informed judgment. The report does include summary data, however, indicating that the twins had been together for an average of 5.1 months prior to their separation with a range from 0 to 48.7 months, and had had an average of more than two years' contact time with each other prior to their testing with a range from one week to more than 20 years (Bouchard et al., 1990, p. 224). Thus the Minnesota sample clearly shares at least some of the limitations of previous reputable studies, and it remains possible that once full details are published, independent reanalyses along the lines of Farber's and Kamin's will suggest IQ heritabilities even lower than the "two-thirds" proposed by the study's authors.

Although it is incidental to the scientific argument, a final word is in order about Herrnstein and Murray's brief and misleading treatment of the Cyril Burt "scandal." They first mention Burt (p. 11) as the subject of Oliver Gillie's London *Sunday Times* exposé, which alleged in 1976 that Burt's study of separated twins had been fraudulent. Without detailing the issues or any of the evidence involved, they proceed to a box entitled "The Burt Affair," which declares:

It would be more than a decade before the Burt affair was subjected to detailed reexamination. In 1989 and 1991, two accounts of the Burt allegations, by psychologist Robert Joynton and sociologist Ronald Fletcher, written independently, concluded that the attacks on Burt had been motivated by a mixture of professional and ideological antagonism and that no credible case of data falsification or fictitious research or researchers had ever been presented. (p. 12)

Herrnstein and Murray do not mention Kamin's (1974) previous discrediting of Burt's study on purely scientific grounds, or Jensen's (1974) judgment that Burt's data were useless for hypothesis testing. (Kamin's book is cited, but

described only as a source of overheated political rhetoric against intelligence testing.) *The Bell Curve* neither discusses nor cites Hearnshaw's (1979) biography of Burt, which was written with full access to Burt's private papers and presented a detailed case indicating that Burt had no personal contact with twins nor with his alleged collaborators during the years his reported twin sample was growing so dramatically. Hearnshaw further documented numerous clearcut examples of unethical behavior by Burt; for example, he crammed the *British Journal of Statistical Psychology*, which he edited, with attacks on his critics actually written by himself but attributed to a large number of fictitious authors. Herrnstein and Murray do not mention that the "rehabilitation" efforts by Joynson and Fletcher are essentially critiques of details from the Hearnshaw biography, and that these critiques have themselves been subjected to serious criticism (Fancher, 1989, 1991; Lovie & Lovie, 1993; Samelson, 1992; Weizmann, 1992).

Herrnstein and Murray conclude their discussion of Burt on the following surprising note:

An ironic afterword centers on Burt's claim that the correlation between the IQs of identical twins reared apart is $+.77$ In 1990, the Minnesota twin study, accepted by most scholars as a model of its kind, produced its most detailed estimates of the correlation of IQ between identical twins reared apart. The procedure that most closely paralleled Burt's yielded a correlation of $+.78$. (p. 12)

There were two Minnesota measures that yielded correlations of $.78$ —"a Raven [Matrices], Mill-Hill [Vocabulary test] composite," and "the first principal component of two multiple abilities batteries" (Bouchard et al., 1990, p. 224). But because Burt had described his measure extremely vaguely as "a group test of intelligence containing both non-verbal and verbal items" (Burt, 1966, p. 140), how can Herrnstein and Murray imply with such assurance that either of these Minnesota procedures "closely paralleled Burt's"? Herrnstein and Murray completely overlook the major point about Burt's study. What had originally set it apart was not the exact size of its correlations, for other studies had reported values in the same general range, including Shields's $+.77$. Burt's only really important claim was that his twins, unlike anyone else's, had been randomly placed in a representative range of home environments. *The Bell Curve* completely fails to indicate that no rehabilitation job on Burt so far, no matter how generously interpreted, has been able to produce credible evidence to support that claim.

In sum, the actual evidence from separated-twin studies offers a substantially less "direct" and "pure" estimate of IQ heritability than Herrnstein and Murray claim for it, and points to a value substantially lower than they assert. Because their "middle ground" heritability estimate of $.6 \pm .2$ for the American population as a whole relies explicitly on separated twin studies to support the upper end of that figure, it is clearly an exaggeration to some degree. Had their consideration of separated-twin studies been truly fair and middle-ground, they might have concluded along the lines of Newman et al. (1937) at the end of their pioneering study almost 60 years ago:

The farther one penetrates into the intricacies of the complex of genetic and environmental factors that together determine the development of individuals, the more one is compelled to admit that there is not one problem but a multiplicity of minor problems—that there is no general solution of the major problem nor even of any one of the minor problems.... We feel in sympathy [with the] dictum that what heredity can do environment can also do. (p. 362)

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How Can *The Bell Curve* Be Taken Seriously?

How can a book that is so full of errors, so rife with inconsistencies and contradictions, and so blatantly biased and racist possibly be taken seriously at all?

One of my favorite little books of all time is entitled *How to Lie With Statistics* (Huff, 1954). This lovely piece of work coined the word *statisticulation*, which is defined as "statistical manipulation" or "misinforming people by the use of statistical material" (p. 100). The word is a good description of what is done in Herrnstein and Murray's *The Bell Curve*. Huff also points out that whenever data and statistics are presented to support any argument one should give the data and their treatment a critical second look. "Give that kind of second look to the things you read, and you can avoid learning a whole lot of things that are not so" (p. 19). This observation is appropriate for *The Bell Curve*.

When considering *The Bell Curve*, what amazes me is how a piece of work that is so poorly done, is so full of errors, is so rife with inconsistencies and contradictions, and is so blatantly biased racist could possibly be taken seriously at all. The fact that hundreds of media outlets (newspapers, magazines, radio programs, television shows) have discussed it, the American Educational Researchers Association/National Council on Measurement in Education annual meetings in San Francisco in 1995 contained a major, well-attended session on it, and a book presenting reactions by over 80 authors including Stephen Jay Gould, Irving Horowitz, David Suzuki, Arthur Jensen, and Carl Bereiter, to name but a few, has been produced (Jacoby & Glaberman, 1995) reinforces to me that the topic is an important one that elicits much emotional reaction. Obviously, people are concerned about the issues discussed in the book: the increasingly large and impenetrable barrier between the haves and the have-nots, the rich and the poor, the advantaged and the disadvantaged; the deterioration of what were once, and may still be considered, positive aspects of family and society; accelerating poverty, crime, and violence; education that seemingly does not challenge the bright or even constructively contribute to the "normal" student; and so on.

What concerns me is that such a poor, inferior piece of work that utterly lacks credibility might possibly have even a small influence on future social policy.

I am not a qualified sociologist, which tells me I should not expose my ignorance by attempting to discuss some of the social issues in the book that concern me. However, I do know something about statistics and data analyses,

logic, reasoning, argumentation, and methodology. It is in these areas that I make a few brief comments.

The problems that I found in the document are so numerous that it would take a book larger than the original to point out and explain them. Besides, many of these problems have already been exposed in numerous other situations as mentioned above. In fact, I doubt if there is a problem with the book that has not already been pointed out, so I will pay attention to only a few critical issues that can be used to illustrate what researchers should not do. The fatal flaws in the book, which the authors themselves point out, can become learning experiences for all researchers, novice or experienced; many of the mistakes are so easy to make when one is attempting to use research to “prove” one’s point rather than using it to explore and learn about a question or problem of interest.

One of the good things about the book is that most of the substantial errors are already pointed out by the authors. I confine my comments to five major, fatal flaws that the authors themselves conveniently expose.

Probably the most striking flaw relates to the often improbable leap that these researchers (and I use the term loosely) make from uncovering a correlation to inferring, and then ratifying causality. All researchers are emphatically taught early in their development, and usually in their first statistics or methods course, that correlation does not necessarily infer causality. Many negative and often ridiculous examples are presented as illustrations in almost every statistics text printed. Taking a famous case as an example, one is not justified to conclude that churches cause crime just because there is a high, positive correlation between the number of churches per unit of population and the crime rate in urban centers in the United States. The authors of *The Bell Curve* themselves frequently and emphatically point out that one should not infer causality from correlation. They stress the point and repeat themselves often. After cautioning the reader, they then spend the rest of the book doing exactly what they have preached one should not do: they continually infer causality from correlations. This is one of the numerous contradictions and lack of coherence that permeates the text.

Another particularly glaring inconsistency is that early in the text the authors point out that using race as a category for discussion cannot be substantiated in any scientific way; that using race to distinguish among people cannot be justified in any way. They then proceed to use their category of “ethnicity” and to draw conclusions regarding and between their major sub-categories of “black” and “white” throughout the rest of their book! A rose by any other name ...

A third awesome inconsistency is that the authors assert it is impossible to separate the relative contributions of genetics and environmental influences to what they call cognitive ability (rather than IQ). They acknowledge that, even within broad ranges, no satisfactory scientific proportions of these two influences have been even remotely confirmed. They then go on to conclude that environment contributes less than genetics and make the assumption that a “conservative” 60% due to genetics will form the basis of their arguments. From this they conclude that intelligence is “essentially” inherited through genes, and this then forms a fundamental cornerstone of their thesis.

They argue and base most of their conclusions and recommendations on the principle that cognitive ability, as measured by the tests they support, is essentially fixed, it is destiny, that nothing can be done to invoke change. At the same time, they report numerous counter-examples: "immigrants have sometimes shown large increases"; that poor education can lead to low scores; that children introduced into stable, supportive homes frequently show large gains; the list can go on and on. Strangely, they make clear the assumptions on which their arguments are based, and then show that these assumptions are patently false.

The final point I make has to do with data. Most researchers would heartily agree that the quality of any conclusions based on data is directly related to the quality of the data themselves. Based on their analyses of their data, the authors condemn the last 20 years of attempts to "equalize the playing field." Yet most of the key data that the authors use do not include results from any children who would have been influenced by any of the remedial, catch-up, enriching, desegregated, and so forth programs that have been introduced since the mid-1960s. The data the authors rely on most heavily tracked individuals through much earlier eras of development. However, they do not hesitate to use those data to argue against and even condemn recent programs, the possible effects of which the data do not and cannot capture. The lack of validity of their conclusions is astounding. How can anything so blatantly flawed be taken so seriously?

The five flaws above are so basic that they would not be accepted in even the worst graduate student paper; they are fatal weaknesses. Considering only these five problems, the entire thesis of *The Bell Curve* totally disintegrates.

Presented under the guise of being an objective, academically sound piece of work based on a long tradition of established research, the publication is so rife with spurious coefficients, weak links, biased use of data, misrepresentations, and blatant logical inconsistencies that it does not seem to deserve the attention it is getting. Perhaps it will serve the important purpose of bringing to the fore some of the immense problems our society presently faces. However, I doubt it. Instead it will probably do two things. First it will probably elicit destructive, emotional reaction from those opposed to blatant racism. The second, and probably most damaging, effect of the publication is that it may well discourage more ethical researchers from investigating some of the variables that require study for fear that they may be cast into the same pit of lions that Herrnstein and Murray deservedly have been cast by many who have critically examined their work.

Fortunately, most of the controversy and attention that the book has garnered have been confined to the United States of America. I would hope that Canada has enough sense to direct its energies to attempting to solve the pressing societal issues of today, rather than wasting energy in countering such meaningless drivel as presented in *The Bell Curve*.

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The Bell Curve: Some Statistical Concerns

This voluminous book (Herrnstein & Murray, 1994), running into several hundred pages is packed with information, data, and the authors' theory that intelligence has a strong genetic component. My purpose here is not to comment on the rather ethnocentric views of the authors. My comments are confined to some of the methodological limitations of the research base of this book.

A Misnomer

The title of the book is a misnomer. The authors state often in the book that psychologists or psychometricians "make" the scores normally distributed. All the statements about the top, or the bottom, levels of students or people by IQ and other characteristics are based on the fit of the normal curve to the data. The normal (or the bell curve, or the Gaussian, or the error) distribution in its univariate or multivariate form can be generated in many ways. If IQ scores are a result of several additive forces (factors), then a normal distribution may ensue. The conditions for this have to be examined and analyzed. I would like to have seen some tests of goodness carried out before the blind use of the normal distribution.

Nonnormal Distributions

Several characteristics do not follow the normal distribution. Some are highly and some moderately skewed. Some have positive and some negative skewness. Some follow a Type I or a Type III Pearson distribution. Some follow the Pareto distribution.¹ Income in capitalist societies has a Pareto form. Studies done by Pareto himself and many others of income data for the United States show that a Pareto representation of the data is very satisfactory (Arnold, 1983; Lange, 1978). Studies done by Krishnan (1985) and Krishnan, Ng, and Shihadeh (1990) show that the generalized Pareto distribution applies to a wide range of social characteristics. Davis (1941), in his *Theory of Econometrics*, notes that the results of examinations in mathematics, the number of dissertations published in scientific periodicals, the efficiency in the game of golf and so forth, have a distribution similar to the Pareto distribution. These examples imply that further progress in the development of educational and physical efficiency are easier for persons who have already reached higher levels.² If abilities are Pareto in form and income also follows the Pareto curve, then the two are likely to be highly correlated and the joint distribution will be a bivariate Pareto.³ The authors of the book have not looked at the various forms of Pareto distribution to develop their thesis.

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Use of Percentiles and Other N-tiles

The authors make copious use of percentiles and quintiles for making their points. These are fine if the data are normally distributed. For data on incomes and so forth, because the distributions are not normal the use of these n-tiles is suspect. Comparisons are possible with the help of some measures of inequality. The Lorenz curve or entropy or the simple index of dissimilarity would have been worthwhile. For instance, on pages 131 and 132 of the book, the percentages of people in poverty by parents' socioeconomic class and cognitive class are shown. The authors argue that as the cognitive level increases, the degree of poverty declines. If the index of dissimilarity is calculated, either for the poverty distribution or for its obverse, what we get is that the distributions of people by income and cognitive level are similar. The authors' conclusion is a bit hasty and rather simplistic.

Limited Multivariate Techniques

The authors use regression models. Other types of multivariate procedures could be profitably used here. For instance, Fisher's discriminant function can be employed (with a causal or noncausal framework) to distinguish between the rich and the poor, the whites and the blacks (or the nonwhites to include all other ethnic groups), the immigrants and the nonimmigrants. There are other techniques such as Mahalanobis D^2 statistic, general classification analysis, and Hotelling's T^2 statistic. Most of the regressions developed on pages 595-623 are poor linear fits. No meaningful inference can be made with these regressions unless nonlinear models are investigated. The modeling aspect is complex indeed. The authors should have been very cautious in their interpretation of the results.

Genetic Foreboding

The authors give a genetic slant to their results. They assume assortive mating of elite men and women. Is there a guarantee that the offspring of such matings will be bright or even brighter than the parents? In population (medical) genetics instances of inheritance of diseases in the mating of close kin relationships and of ethnic groups (e.g., Jewish group in North America) are discussed. The Mendelian laws yield us the ratios of the various phenotypes over generations. What the authors ignore are the possible social and family related consequences that may arise over time among such elite populations. Too much rigor and stricture on educational training may lead to deviant behavior in the young.

Final Word

This book has raised some important questions on the determinants of class structure in North America. It is left to the social scientists all over the world to refute or support the main thesis contained here based on rigorous statistical analyses.

Notes

1. The Pareto distribution or curve is given by the mathematical representation:

$y = \frac{A}{(x-a)^\alpha}$, where x (horizontal axis) is the income and y (vertical axis) is the number of people whose income is more than x , ' a ' is the lowest income at which the distribution (curve) begins and A and α are positive parameters. If we move the vertical axis to $x=a$, then

the Pareto curve takes a simpler form: $y = \frac{A}{x^\alpha}$ or $y = Ax^{-\alpha}$. The probability function of the

Pareto distribution is $f(x, a, \alpha) = \alpha \frac{a^\alpha}{x^{\alpha+1}}$.

2. It can be shown that: $\frac{dy}{y} = -\alpha \frac{dx}{x}$. This implies that the relative screening (decrease) in the number of persons as the income increases is smaller and smaller and diminishes in proportion to the income. The implication is that the advance to higher income class is easier for those who have already reached a high income than for those with low income.
3. Bivariates and multivariate Paretos are discussed in Arnold (1983) and Krishnan (1985).

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The Spurious Relationship Between IQ and Social Behavior: Ethnic Abuse, Gender Ignorance, and Confounded Education

The Bell Curve is a pretentious, rather myopic study of stratification in the United States. Herrnstein and Murray (1994) argue that the expansion of educational opportunity in 20th-century America has produced a new "cognitive" elite. The good news is that a new more meritocratic educational recruitment process has realized the American dream of widespread educational and occupational opportunity. It has brought prosperity to many. The bad news is that the cognitively challenged have been left behind, and social welfare programs don't work because they fail to address this cognitive disadvantage. Indeed, it is hard to see what would increase cognitive abilities (beyond nutrition). Furthermore, because the well-to-do in the United States have stopped having kids, the burden of disadvantaged people will increase.

Has America come to be dominated by a cognitive elite selected in some sort of meritocratic process that stratifies society by intelligence? We think not. The ruling class of the United States (or Canada, for that matter) is not dominated by its advisers, or by the corporate lackeys who implement their will. The golden rule is still in force: "he who has the gold rules." Knowledge may be power, but you can buy knowledge, and knowledge is most effective for those who have the corporate means.

Is the structure of stratification in Canada and the US increasingly based in part on cognitive ability? To some extent it is. The reconciliation of these disparate answers lies in understanding the differences between the questions. The "brains trust" has not captured government and industry. The global village is not run by a cognitive elite, although it may be operated by one. The capitalist class has recruited a large number of clever helpers through an increasingly competitive educational system. The winners are well rewarded for their labor. If this is a "cognitive elite," then it works for a new capitalist class or for a more local national elite in a world capitalist economy. In a

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different sense, just because the important players in the capitalist world economy have received postsecondary education does not qualify them as a cognitive elite.

Of course, the contemporary trend is to try to make more money with fewer of these expensive “helpers.” Downsizing and restructuring may be all the rage, but there is remarkably little indication that it guarantees profitability. It may undermine political stability if education is no longer viewed as *the* road to the good life. The meritocracy is being undermined. Many of the meritorious (those who receive bachelor’s degrees, even professional degrees) are not rewarded with appropriate careers, reasonable security, and good incomes.

After all is said and done, how can Herrnstein and Murray expect to understand an elite whom they never study? Population statistics and random sample surveys are entirely appropriate to the study of the general population. They are not appropriate to study elites, except perhaps by comparison. Herrnstein and Murray’s principle source of data, the National Longitudinal Study of Youth (NLSY), was designed to represent the general population. It is totally inadequate to study the capitalist power elite. They comprise but a few thousand families, and the probability of their being selected in a general random sample is remote indeed. Besides, we doubt that they would consent to participate, even if by some chance they could be contacted. If Herrnstein and Murray think that their cognitive elite is becoming isolated, they should try conducting interviews with really powerful people, even those in public office. Not only do Herrnstein and Murray use a methodology designed to ignore the elite, they also studiously ignore the voluminous sociological literature on social class, whether it is based on Weberian (Goldthorpe, 1987), Marxian (Wright, 1985), or completely different ideas concerning the labor theory of value (Sorensen, 1991). They also ignore the large body of economic and sociological research on education, as well as sociological research on social mobility or status attainment (for reviews see Kurtz & Muller, 1987; Wegener, 1992). We return to this literature because it so closely parallels their implicit models and makes many of the same mistakes.¹

Leaving aside the ludicrous contention that intelligence rules America, or that power elites are selected primarily on their cognitive abilities, let us focus on the merits of the much narrower argument that educational and occupational attainment in America has become so much more meritocratic. What does this model look like? First of all, it is important to note that Herrnstein and Murray never make this model explicit. If they had done so, its central features would have looked just like the status attainment model outlined almost 30 years ago by Blau and Duncan (1967). The first part of the status attainment model represents mobility by identifying the effects of exogenous “ascribed” status characteristics of individuals (family of origin status, gender, ethnicity, and eventually IQ) as determinants of educational attainment. The second part of the model examined the effects of these exogenous² “ascribed” status characteristics and educational attainment on occupational prestige (both for entry jobs and subsequent occupational attainment).

This is essentially the same model that underlies Herrnstein and Murray’s research. According to their argument, the cognitive elite is produced by a meritocracy in which cognitive ability is the principal determinant of educa-

tional attainment (particularly net of other ascribed status), occupational attainment, and many other things as well (occupational performance and income among them). Herrnstein and Murray do examine the effects of cognitive ability on attainment net of status of family of orientation. They demonstrate fairly convincingly, as have others before them, that cognitive ability is a stronger determinant of education than family of orientation socioeconomic status. Social status of family of orientation retains some influence net of cognitive ability, but we would except their argument that educational systems have become more meritocratic. We would accept the argument that gender and ethnic differences in gross educational attainment (years successfully completed) have decreased, and are relatively small once the influence of cognitive ability is taken into account. Differences in type of education remain.

The second link in the meritocratic chain is the effect of education on occupational outcomes (net of ascribed status). There are several serious problems with Herrnstein and Murray's treatment of this part of the model. First, in order to demonstrate that cognitive ability has a direct effect on occupational outcomes, they would have to control for the effects of education. This control is necessary to specify the indirect effects of cognitive ability through its influence on education, and any direct effects that cognitive ability might have on occupational outcomes, net of education. When they examine the effects of cognitive ability on occupational outcomes (including income), they do control for the social and economic status of family of origin. They do not control for education. In fact, they go so far as to use education as a replacement (their word) for cognitive ability in analyzing income differences (Appendix 6). As a result, they hopelessly confound the effects of education and cognitive ability. Their method of statistical analysis extends this problem to their observation of ethnic differences. They do not have this problem with observed gender differences only because they avoid gender other than to make it a control category.

The decision not to control for education while examining the effects of cognitive ability is rationalized (p. 124) by arguing, first, that they cannot control for educational attainment because it is dependent on parental socioeconomic status and IQ. Therefore, education "expresses" the effects of parental socioeconomic status and IQ. We accept their premise (parental status and IQ influence educational attainment). We do not accept their conclusion. Because IQ causally precedes education,³ they must control for educational attainment when examining the effects of IQ on social behavior. Otherwise, they cannot distinguish the effects of cognitive ability (IQ) from those of education.

Their second rationalization for not controlling for education when estimating the effects of cognitive ability is that the effects of education are discontinuous. They point out that certification (e.g., high school diploma, college degree) may have an effect beyond years of schooling. This is a red herring. If they are correct, then the effects of education on occupational outcomes may be underestimated, because the variance associated with certification is not examined. This is hardly an excuse not to control for education at all when examining the effects of "cognitive ability." Rather, it is an effective argument for just such controls. Again, they demonstrate that they know how to overcome this kind of a problem. Indeed, the education variable that they use as a

“replacement” for cognitive ability in analyzing income differences (Appendix 6) is measured not in years successfully completed, but in five certificate levels. Besides, they repeatedly analyze specific certificate subsamples (high school diploma, university degree) when it suits their purposes.⁴

Their third excuse for not controlling for education when examining the effects of IQ is the possibility of multicollinearity. They imply that education and cognitive ability are just too highly correlated to both be used in analyses of occupational and other outcomes. Not one scrap of evidence is presented to substantiate this claim. They are very careful not to present the correlation between education years and the AFQT test (their measure of cognitive ability). They achieve this sleight of hand by introducing the NLSY only after they have finished arguing the connection between cognitive ability and educational attainment.

We doubt that the correlation between education and cognitive ability is so high as to introduce multicollinearity. As a rule, it would have to be well over .70. We suspect that they attempted a number of analyses in which both the AFQT and education years were included, and results did not support the argument that cognitive ability had substantial direct effects on occupational outcomes net of education. We suspect that its effects are in many cases primarily indirect through education, and because they are indirect, they are much smaller than would be necessary to sustain arguments about cognitive elites.⁵

Beyond these difficulties, Herrnstein and Murray abuse both gender and ethnicity. They employ these powerful, socially meaningful ascribed statuses primarily as control categories, rather than as interacting, explanatory variables. They tend to hide the main effects of ethnicity (Collins, 1989) and they manage to ignore the effects of gender altogether.⁶ To make matters worse, the ethnic categories employed by Herrnstein and Murray are diverse. This makes it difficult to identify the meaning of ethnic differences without explicitly examining cultural characteristics of ethnic groups. East Asians may be Chinese, Korean, or Japanese, all with different cultures and similar enmities toward one another. Latinos include New York Puerto Ricans, recent Mexican immigrants to southern California, Cuban immigrants to Miami from the first wave of immigration, and sixth-generation Mexicans living in New Mexico and Arizona. With all this diversity, there is, of course, considerable variation in English literacy. Unless the AFQT was administered in “first” or “primary” languages, standard American English fluency would be hopelessly confounded with AFQT scores measuring cognitive abilities. Cognitive ability (thinking?) is thereby confounded with ability to communicate in English.

As if it were not bad enough that Herrnstein and Murray abuse ethnicity, they simply ignore gender. This demonstrates inexcusable ignorance. Although they do use gender as a control category (e.g., analysis of mothers of white children), most of the time they leave it out altogether (e.g., analysis of income). They justify their decision by strange logic, noting that there are no significant gender differences in educational attainment (years of education successfully completed) even within ethnic categories. This ignores differences in types of education (e.g., professional education), but that is not all. Lack of gender differences in education or AFQT scores (IQ) is hardly grounds to

assume that there are no gender differences in other “social behaviors,” such as income.

In the US in 1992, women with college degrees earned \$11,721 per year less than their male colleagues (Rothenberg, 1994). If there are no truly significant gender differences in cognitive ability, this large gender difference is not attributable to IQ. The consequences do not stop there. Differences that Herrnstein and Murray attribute to ethnicity or even to parental status may be attributable to gender; after reading their results we simply do not know. What we do know is that Herrnstein and Murray’s observations as to the effects of IQ on social behavior are hopelessly confounded by both gender and education.

Herrnstein and Murray pull another statistical “fast one” by not evaluating how well their models fit in some cases (Appendix 6), or by creatively ignoring poor results when it suits them (dismissing poor model fits in Appendix 4). This statistical sleight of hand is used to exaggerate their claims for the confounded effects of cognitive ability on social behavior (chapters 5 through 12). The models in Appendix 3 that estimate the effects of AFQT on poverty (controlling for SES and age, not controlling for ethnicity or gender) both have a (pseudo) R^2 of less than .10. Less than 10% of the variance in poverty is explained by all the factors in the model, including IQ. In other words, 90% of the variance in poverty is left unexplained. This does not seem to bother Herrnstein and Murray. The detailed results for model estimates underlying Chapters 5 through 12 presented in Appendix 4 show that fully five out of eight of the more than 60 models account for less than 10% of the variance. In most cases, cognitive ability and all the other predictors explain remarkably few differences in social behavior (poverty, unemployment, idleness, injury, family matters, or parenting).⁷

Appendix 1: “Statistics for People Who Are Sure They Can’t Learn Statistics.” What marvelous irony. Statistical chicanery aside, we strongly suspect that the effects of education on occupational attainment (particularly income) have decreased during the 1980s and early 1990s. A university education no longer guarantees quality employment and the good things of life that secure incomes bring. Where does that leave the meritocracy? Where does that leave this new cognitive elite? Downsizing and restructuring in Canada and the US have clearly limited employment opportunities for college graduates (including professionals). The lucky, the connected, and most of the best may still get quality jobs, but this seems only to have exacerbated labor force inequality, particularly in Canada (Morissette, Miles, & Picat, 1994). What happens to political stability as the “cognitive elite” experiences unemployment and underemployment?

The Bell Curve does not address these issues. It can serve only as a very elaborate example for students of social stratification. Beware the spurious relationship. Beware the statistical lie. Accept no assumption unthinkingly. In the information age reanalyze the data yourself.

Notes

1. They do include Sewell and Hauser (1985) in their bibliography, as well as several other works. However, they do not make use of them in the text. In a spirit of evenhandedness, they ignore sociological literatures on social class and education, and economic research on income (and probably much else). This may explain why they miss one of the main criticisms of studies of attainment: that studies of occupational outcomes ignore those for whom wage

and salaried income is not the determining factor in their social status: the criminal, the homeless, and the very powerful or rich among them.

2. Exogenous factors are viewed as predetermined in the sense that they explain other variables in the model, but the model makes no attempt to explain them. They can, of course, be correlated. They may also interact as they influence educational and occupational outcomes.
3. They might also have argued that the direction of causation between IQ and education is difficult to specify. We would accept the data presented in Appendix 3 as clearly laying this issue to rest. Using independent data, they show that education has only small effects on later measures of cognitive ability.
4. They could have tried adding dummy variables representing thresholds in the education process to their regression models, or they could have assessed the utility of such a set of binary variables as a replacement for years of education.
5. For example, if (controlling for other factors in Figure 1) the net standardized effects of cognitive ability on education are .5, and the standardized effects of education on occupational prestige are about .5, then the indirect effects of cognitive ability would be .25. This would mean that for one standard deviation increase in cognitive ability, we would expect only one quarter of a standard deviation increase in occupational prestige.
6. For example, Herrnstein and Murray analyze "Latinos" and they also include gender effects in some of their analysis. They do not include Latino women as an analytical category. As a consequence, when they explain differences in occupational outcomes (e.g., income), they simply ignore gender differences.
7. The only models that seem to work reasonably well are those that use schooling and welfare as the relevant social behaviors.

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Does the IQ God Exist?

The tendency has always been strong to believe that whatever received a name must be an entity or being, having an independent existence of its own. And if no real entity answering to the name could be found, men did not for that reason suppose that none existed, but imagined that it was something peculiarly abstruse and mysterious. (John Stuart Mill)

The fundamental premise of *The Bell Curve* is that a real entity, called intelligence, exists and is easily measurable. Herrnstein and Murray (1994) are true believers; they state, "That the word *intelligence* describes something real and that it varies from person to person is as universal and ancient as any understanding about the state of being human" (p. 1). In their world view, intelligence is accurately measured by a score on a test; this score is known as IQ (intelligence quotient).

What is Intelligence?

Herrnstein and Murray have no doubt that IQ really exists. They uncritically accept intelligence as an entity that is both real and measurable. This premise is incorrect and I present logical arguments and empirical evidence that contradict this assumption. I argue that IQ is merely a statistical fiction, an artificial construct that does not correspond to any real entity. In this commentary, I argue that as a concept, IQ is fundamentally flawed. However, IQ has a long and established history in psychology and challenging its validity is heretical. Let us begin the pilgrimage by considering some of the ways that Herrnstein and Murray conceptualize intelligence. They never actually define it (independently of a score on the IQ test) but provide some hints, based on historical sources, as to what they think intelligence might mean. For example, they note that Spearman defined intelligence as

a general capacity for inferring and applying relationships drawn from experience. Being able to grasp, for example, the relationship between a pair of words like harvest and yield, or to recite a list of digits in reverse order, or to see what a geometrical pattern would look like upside down, are examples of tasks (and of test items) that draw on *g* as Spearman conceived of it. (p. 4)

The IQ score is a measure of *g*, and in a circular argument they assert that *g* is what the intelligence test measures. As Jensen (1980) has stated, "Intelligence is the 'g' factor of an indefinitely large and varied battery of mental tests" (p.

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249). Herrnstein and Murray believe that IQ tests measure *g*. As Jensen (1980) notes,

We identify intelligence with “*g*,” to the extent that a test orders individuals on “*g*,” it can be said to be a test of intelligence. IQ is our most effective test of intelligence because it projects so strongly upon the first principal component (*g*) in factor analyses of mental tests. (p. 224).

Therefore, IQ tests measure *g*, and *g* is defined as what the IQ tests measure. Here we have a fundamental circularity from which there is no escape.

Typically, factor analysis is used to make it appear that the IQ score is an entity with an independent existence. A principal component factor analysis is used to analyze the IQ subtests and justify the existence of the IQ score as a real quantifiable entity, even though the principal components were arbitrarily obtained and vary for each individual. Thurstone’s (1940) views on “*g*” are as valid today as they were then:

Such a factor can always be found routinely for any set of positively correlated tests, and it means nothing more or less than the average of all the abilities called for by the battery as a whole. Consequently, it varies from one battery to another and has no fundamental psychological significance beyond the arbitrary collection of tests that anyone happens to put together.... We cannot be interested in a general factor which is only the average of any random collection of tests. (p. 208)

Gould (1981) cautions against the assumption that “test scores represent a single scalable thing in the head called general intelligence” (p. 155). He warns us to beware of the seductive statistical trap of factor analysis. The concept of *g* is based on a principal component (assumed to be *g*) emerging from the intercorrelation of subscales of an IQ test or IQ tests with each other. He notes,

A factor analysis for a five x five correlation matrix of my age, the population of Mexico, the price of Swiss cheese, my pet turtle’s weight, and the average distance between galaxies during the past ten years will yield a strong principal component. This component—since all correlations are so strongly positive—will probably resolve as high a percentage of information as the first axis in my study of pelycosaurs. It will also have no enlightening physical meaning whatever. (p. 155)

Multiple Intelligences

Another challenge to the concept of IQ is Gardner’s (1983) concept of multiple intelligences, that is, the concept that intelligence is not a single entity but a complex set of mental functions that vary on several dimensions. This concept is dismissed by Herrnstein and Murray, primarily because the evidence for it is not of the statistical variety that is used to construct the mythical *g*. However, Gardner’s basic point is ignored; human cognitive abilities are varied and rich and no paper-and-pencil tests can measure them accurately.

The Measurement of “Intelligence”

Another fundamental question is whether intelligence tests as they are currently constituted measure intelligence. The best way to approach this question is to examine the content of IQ tests. An examination of the content of IQ tests will show that they consist of measures of factual knowledge, definitions of

words, memory, fine-motor coordination, fluency of expressive language: however, these tests do not really measure reasoning or problem solving skills. They measure, for the most part, what an individual has learned, not what he or she is capable of doing in the future. Typical questions on the IQ test consist of definitions of certain words, questions about geography and history, tasks involving fine motor coordination such as doing puzzles, memory tasks in which children are asked to remember a series of numbers, and mental arithmetic problems in which the children must calculate answers in their head without the benefit of paper and pencil. Presumably, the basic aspects of intelligence are such abilities as logical reasoning, problem solving, and critical thinking. However, intelligence tests do not measure these abilities. It is obvious that these types of questions measure what a child has learned, not problem solving or critical thinking skills.

The bias inherent in the vocabulary questions of IQ tests is briefly discussed in Herrnstein and Murray (p. 281) with a good example of culturally biased material. Then this cultural bias is mysteriously dismissed with the wave of a hand (or a word processor). They argue that this item has the same relative difficulty for whites as it does for blacks (compared with other questions) and, therefore, is a valid item. This logic escapes me. Instead, what it means is that this item is invalid for everyone because it depends on past experience or learning and not on some fundamental unlearned ability. Being able to answer these types of questions depends on the learning of some specific information. Therefore, the IQ test is a measure of what has been taught. Unless all children have the same learning experiences, differences in IQ scores measure differences in what has been taught, not some innate immutable quality.

Gould (1981) notes that Binet, generally acknowledged to be the father of intelligence testing, stated that intelligence cannot be measured directly in the same manner "as linear surfaces are measurable. If Binet's principles had been followed, and his tests used as intended, we would have been spared a major misuse of science in our century" (p. 151).

In addition, the IQ test is just a ranking of the individuals in a standardization sample who have taken the test. A serial ranking by definition cannot do more than rank order people relative to others; it is not a measure of absolute amount of individual capacity or potential. This simple concept of ranking has been misunderstood, misused, and confused with capacity. There exists no absolute measure of intelligence that can indicate potential, but only a serial ranking of performance on a group of tests called IQ tests. The misunderstanding of the nature and confusion of the IQ score as a measure of capacity may be due to the reification of the IQ score as a real and quantifiable measurable attribute.

IQ and the Individual Child

I would like to illustrate some of the problems with the use of IQ tests with a specific case, as outlined in Siegel (1990). This is the story of a real individual whose name has been changed to protect his privacy. Larry, age 8, received a score of 78 on an IQ test. He was placed in a class for mentally retarded children. This is a case in which the IQ score was used to make a decision that he was mentally retarded, and this fact should be kept in mind as the rest of the case is reviewed. He remained in classes for the mentally retarded until age 14.

Today, at age 34, he is enrolled in a graduate program in a major Canadian university after completing a BA in psychology with an A average. Larry had great difficulty learning to read, spell, write, and do arithmetic calculations. When tested at age 34 his IQ score was in the high average range; however, he still had significant problems with reading and spelling. His score on the reading (word recognition) subtest of the Wide Range Achievement Test (WRAT) was at the 18th percentile and his score on the spelling subtest of the WRAT was at the fourth percentile. His score on the Woodcock Word Attack subtest, a measure of phonological skills, was at the sixth percentile. He had difficulties on short-term memory tasks and had occasional difficulty with verb tenses and word finding in spontaneous speech. He had good general knowledge and vocabulary and an average score on a reading comprehension test. At age 34 Larry displays a profile of a reading disabled or dyslexic individual; yet at age 8 he was called mentally retarded.

Larry's case is a dramatic example of the consequences of using an IQ test score to make decisions about an individual. At age 8, Larry was *reading disabled*, but instead was called mentally retarded. Larry was fortunate enough to have a determined personality and supportive parents who fought for his rights to be educated.

This case is a real one. Fortunately, it has a happy ending, but for many children with genuine learning problems the ending is not university or graduate school but jail, alcohol abuse, and/or suicide (e.g., Barwick & Siegel, 1995; McBride & Siegel, 1994). Larry's supportive environment did not prevent or cure his reading disability; his reading problem remained throughout his schooling and into adulthood. However, this environment probably prevented Larry from developing the serious social problems that are often a consequence of an undetected and untreated learning disability. Is Larry a rare exception? No. Today a child with poor reading skills and an IQ of 78 would be labeled "mentally retarded" or a "slow learner" or said to have a "general learning disability" and, in any case, would not be labeled as "reading disabled." Such a child would not be called learning disabled and would not receive intensive help with reading, because it would be argued, incorrectly, that we should not expect better reading from an individual with this IQ level. Unfortunately, children with low IQ scores who show signs of severe reading problems are still called mentally retarded even today.

Herrnstein and Murray might argue that this is only one case: IQ tests are not perfect, but in most cases they work. In fact, they have not presented any evidence of the validity of the IQ score for an individual case. They deal only with relationships among variables, for example, race and IQ, and provide averages, but do not show the validity of the measurement for a single case. Further, it is interesting to speculate that if IQ is not valid for an individual, it is really not valid for groups composed of a number of separate individuals.

I and others have argued that the IQ test is not valid for an individual case and should not be used to define a learning disability (for reviews and empirical evidence, see Siegel, 1988, 1989, 1992, 1995; Stanovich & Siegel, 1994, Toth & Siegel, 1994). It is often argued that we need IQ tests to measure the potential of a child. This type of argument implies that there is some entity that is real that will tell us how far a child can go, how much he or she can learn, and what we

can expect of that child. It is a logical paradox to use IQ scores with learning disabled children because most of these children are deficient in one or more of the component skills that are part of these IQ tests. Therefore, their scores on IQ tests will be an underestimate of their competence. It seems illogical to recognize that a child has deficient memory and/or language and/or fine motor skills and then say that the child is less intelligent because he or she has these problems.

The Stability of IQ Scores

Herrnstein and Murray argue for the stability of IQ scores except when they want to maintain (incorrectly) that IQ scores are not subject to improvement as the result of infant stimulation programs (p. 407). "To make things still more uncertain, test scores for children younger than 3 years are poor predictors of later intelligence test scores, and test results for infants at the age of 3 or 6 months are extremely unreliable." This statement is incorrect. They also note, "Up to about 4 or 5 years of age, measures of IQ are not of much use in predicting later IQ" (p. 130). This statement is also false; scores on IQ tests in infancy do predict later scores, but this relationship does not mean that IQ is genetically determined or impervious to environmental influences.

The IQ Religion

Herrnstein and Murray have built an elaborate structure and set of arguments that rest on the existence and validity of the IQ concept. If IQ is not a valid concept then this structure is doomed to collapse. Because IQ is not a meaningful concept, we are left not with an argument about the role of intelligence in determining the social structure of US society, but with a pile of rubble.

The answer to the question in the title is emphatically, "No, the IQ god does not exist." The elaborate structure that Herrnstein and Murray have built on the assumption that IQ is a measurable entity is as vulnerable as a sand castle is to the incoming tide. If IQ does not exist, then the rest of their arguments about class and racial and ethnic differences in IQ are meaningless. We need to beware of false gods.

Acknowledgment

The research described in this commentary was supported by the Natural Sciences and Engineering Research Council of Canada.

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Keep Them Bells a-Tolling

The fundamental argument about IQ testing, and claims about intelligence that are based to a large degree on research making use of such tests, is a philosophical rather than an empirical one. It is an argument about what "intelligence" means, whether *brain* and *mind* are synonyms or denote distinct concepts, whether it makes sense to conceive of an intangible, unobservable, and nonmeasurable capacity, or, conversely, whether it makes sense to imagine that there is some way of directly assessing intelligence. Some of those who employ standardized tests of intelligence as the basis of their research pay lip service to this point, though often it is only lip service. Others, despite over 100 years of intense discussion on the matter, seem quite oblivious of the fact that the major concerns are philosophical in nature and cannot, therefore, conceivably be laid to rest by any amount of further testing or statistical sophistication.

The popularity of Herrnstein and Murray's *The Bell Curve* (1994) is a little disturbing, therefore, given that, although they are fully aware that the value of their kind of research is disputed, and although they show some signs that they recognize that the issue goes beyond the technical proficiency of their work, they do not in the end give any indication that they understand the true philosophical nature of the problem. Indeed, the fairly lengthy bibliography rather gives the game away. There is no reference, for example, to Simon's pioneering (1971) *Intelligence, Psychology and Education: A Marxist Critique* first published in 1953 as *Intelligence Testing and the Comprehensive School*, no reference to the work of Ryle (1949), Glover (1976), Searle, (1984), or any other prominent philosopher of mind, no reference to Kleinig (1982), or any other philosopher of education (including myself, see Barrow, 1993) who has worked on the concept of intelligence, no reference even to those such as Young (1986), who while addressing the philosophical issues might nonetheless be sympathetic to the authors' position, nor finally to those psychologists who do show an awareness of the conceptual and logical problems inherent in intelligence testing such as Fontana (1981).

Herrnstein and Murray do at some level recognize that there is an argument that they need to face up to, but they have some difficulty in engaging with it. They know, for example, perfectly well that research of the kind they engage in ideally has to take account of all possible variables. They also rightly criticize fellow researchers who claim to be focusing on some new variable that is in fact merely a familiar one under a new name. But they seem neither to conceive of a number of particular variables that might affect test performance and have

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not been researched, nor to recognize that the very idea that a research program could take account of all the variables involved is itself suspect to some. Basically, as they say, they are classical behaviorists, and as such they make the logical mistake of thinking that their theoretical perspective can be defended or proved sound by empirical research. They only have eyes for, they only believe in, what they can observe and measure. If one shares that premise, then most if not all of their argument is quite plausible, just as Herrnstein's syllogism to the effect that "if differences in mental abilities are inherited, and if success requires those abilities, and if earnings and prestige depend on success, then social standing will be based to some extent on inherited differences" is quite valid. But that's an awful lot of "ifs": the conclusion may be valid, but it may also be false. In the same way, for those who cannot understand why anybody should be so blind as to trust only their eyes, the behaviorist position is absurd, and would remain so regardless of what was contained in the 845 pages (including appendixes) of a book such as this.

Thus Herrnstein and Murray stress the degree of agreement among "the top experts on testing and cognitive ability" and, perhaps a little defensively, contrast academe with popular media pundits. But the problem is that the crucial questions are not the technical sort in which those referred to have expertise. So when, for example, they list six conclusions that they maintain are "beyond significant technical dispute," it is important to recognize that this may be true, without it being the case that the claims in question are true, have any real significance, or even mean anything coherent. Again, they know, of course, that "most mental tests are designed to produce normal distribution," but they don't seem to be sensitive to any of the implications of this fact: in particular, they seem not to realize that any conclusion drawn from such research to the effect that some people are more intelligent than others and most are about average is a foregone conclusion. One may accept that a high IQ is a good predictor of subsequent job productivity, higher educational attainment, prestigious occupation, and higher income, and that low IQ is a stronger precursor of poverty than low socioeconomic background, without being remotely impressed by the idea of using such tests. To accept that the IQ scores are good predictors is to say just that: generally speaking there is a high correlation. But, as the authors themselves are well aware, to say that it is generally the case tells us nothing about a particular case; there may well be numerous other factors that could decisively diminish the truth even of the generalization, and to make the judgment (whether revealed to the individual or others) may itself affect the outcome. But perhaps the main danger of such activity is that no matter what the testers say, IQ remains associated with intelligence in people's minds. And here we come to the nub of the matter.

The fundamental problem in the field of intelligence testing (and a great many other branches of empirical psychological inquiry into mental phenomena) is the lack of any coherent theory of intelligence (or mind) to give sense to and drive the practice. What I mean by a theory of intelligence in this context is a convincing articulation of the concept (which incidentally but importantly is not to be confused with a definition, even a clear one). I cannot here go into the question of what appropriate philosophical analysis of a concept involves (Barrow, 1991, Barrow & Milburn, 1990), but I think that understanding what

philosophical analysis is, and what it is not, could almost be treated as the hallmark of the bona fide philosopher; and, further, I believe that lack of this understanding is possibly the major problem that vitiates empirical research in the social sciences. Without any such articulation of the concept of intelligence, intelligence is inevitably defined by the instruments used to test it. We truly have not advanced beyond Boring's (1957) remark that intelligence tests only test intelligence, if intelligence is defined as "what the intelligence tests test." Any such definition, besides being *prima facie* unconvincing, would raise the question of why anybody should value or be interested in intelligence in this sense.

Much criticism of this book to date has centered either on technical discussion of the use and interpretation of statistics or on the fact that the authors make the "politically incorrect" or "socially awkward" claim that the IQ scores of American blacks are in general lower than those of American whites, and that this difference can be attributed to genetic factors. I shall ignore both these lines of criticism. It will be readily agreed that argument about the statistical procedures becomes irrelevant if the whole approach is misconceived, as I hope to show it is. The frightening idea that if something happens to be awkward or embarrassing we should suppress or deny it, even if we have reason to believe it is true, though hardly unexpected in these politically correct times, is too contemptible to waste time on.

There are, however, three devastating objections to the whole approach to intelligence involved in this research.

1. The normal curve or bell curve of distribution is not a discovery of the research or a conclusion to be drawn from it, but a premise (as the authors are of course aware). It is presupposed by all involved in IQ testing that intelligence will follow the pattern of distribution of something like height. It is visibly the case that a few people are short, a few tall, and most people distributed in the middle. It is hypothesized, for no very good reason that I can think of, that the same will be true of intelligence. Whatever its merits, this assumption remains a totally unproven hypothesis. But because the hypothesis is accepted, IQ tests when being designed are themselves tested for validity against this criterion. That is to say, a test that doesn't show a normal distribution is for that reason alone going to be rejected as invalid. Consequently, any researcher using standardized and accepted IQ tests is bound to end up with a normal distribution or bell curve.

One reviewer, commenting on Murray's claim that the book's comments on blacks have been overemphasized, agrees, and remarks: "what the book really tries hard to prove is that most Americans—white and black—are not very bright, and that nothing much can be done to improve the bell curve distribution of intellectual ability" (Shelden, *The Weekly Telegraph*, No. 186). This is not perhaps phrased very fairly or felicitously, but what is of course true is that the main uncontentious conclusions to be drawn from the research are that IQ is distributed normally and that it is largely constant. What is also true is that the conclusions were essentially dictated by the mode of research (i.e., the nature of the tests). Something would be wrong if tests designed to show a normal distribution did not, and, a bit more subtly (see further below), something would be wrong if tests painstakingly

devised to exclude consideration of social or environmental conditioning were interpreted or seemed to tell us something about the external circumstances of the individual. Not that we aren't still left with rather a lot of questionable further claims, including the presumption that what seems to be innate, in the sense of not the product of external factors, is necessarily hereditary and the authors' view that 60% of IQ is inherited. But the main point to be made here is simply that the bell will go on tolling as long as people persist in pulling the rope; that is to say, we will learn nothing interesting about the *distribution* of IQ, so long as we continue to use IQ tests. We will simply affirm the preconception that its distribution follows the pattern of the bell curve.

2. The claim that whatever differences are recorded between individuals or groups are attributable to genetic factors is an inference that is likewise unproven. The claim gains what credibility it has from the fact that the tests are designed—albeit imperfectly, as we shall see—to test basic, rudimentary, and relatively limited or circumscribed skills that are not likely to be affected by social factors and, above all, education.¹ The reason for this is straightforward but once again self-fulfilling: it is presumed that there is something called intelligence that is in some sense located within the individual, which is perhaps to be distinguished from its developed state, which may owe something to external factors. Well, of course, if you treat intelligence as if it were an innate and fixed characteristic, like the color of one's eyes, and only test for something that is fixed or constant in the sense of unaffected by environment, upbringing or education, you will find something more or less constant. The question then becomes whether what you find or focus on bears any resemblance to what most people mean by intelligence or has any value.
3. The research imperative leads people to attempt to devise tests of skills that will not be affected by education or environment, even though that begs the question of whether these skills have anything to do with intelligence. However, as noted above, it is not in fact possible to do this job perfectly. Thus the differences between American blacks and whites, recorded by Herrnstein and Murray are not necessarily genetically based, because no test is likely to be completely culturally neutral and the question of whether one is or not cannot be determined from its use in research such as this. For example, one SAT item requires individuals to choose from four alternatives the pattern that is analogous to the pattern of "runner/marathon." The choice lies between (a) "envoy/embassy," (b) "martyr/massacre," (c) "oarsman/regatta," and (d) "referee/tournament." The testers proclaim the correct answer to be (c) ("oarsman/regatta"). It will be argued by many that this is a highly debatable contention. More to the immediate point, can one seriously maintain that there is no cultural bias here? Is everybody as familiar with the idea of regattas and oarsmen as everyone else? Was there never a person whose upbringing and background were such as to have left him or her unfamiliar with words like *envoy* and *embassy*? I cite this example because Herrnstein and Murray do themselves, precisely in order to deal with such criticism. But their discussion, while it fairly makes the point that as a matter of fact this item does not appear to discriminate against Blacks,

illustrates once again the great divide between a technical and a philosophical debate. No amount of evidence that as a matter of fact a given group does or does not appear to do as well on a specific test item as another group has any bearing on the question of whether the item is or is not culturally loaded. The question is whether it is coherent or plausible to maintain that understanding of analogous relations such as these is the product of some innate capacity rather than some aspect of upbringing. Put that way, it is difficult to see how anyone could offer an affirmative answer.

My argument, then, is that the entire research program carried out by Herrnstein and Murray is vitiated by the fact that it relies on tests that are designed to focus only on skills that are unlikely to be affected by time, place, or education and that are normally distributed. In fact the tests cannot be relied on to escape the influence of external factors, but at this point the question to emphasize is surely, assuming that the tests could be relied on to test only skills that were unaffected by external factors, why should we regard them as tests of intelligence, and why should we care?

There are only two ways in which such tests could be regarded as truly giving us information about intelligence: either we define intelligence in terms of the ability to do well on these tests, or we produce reason to suppose that good performance on the tests correlates with true intelligence. The first option strikes me as quite untenable: this is not what anyone means by intelligence, nor is there any particular reason to value the ability to display such rudimentary skills in and of themselves. The second option runs up against the uncomfortable fact that there is no such evidence. There is, it is true, some limited evidence suggesting a correlation between high IQ and subsequent academic achievement. But in a culture where academic achievement is itself to some large extent defined in terms of SAT scores, multiple-choice exams, and performance on tests of alleged generic skills of critical thinking, creativity and the like, this is to be expected. I am aware of no evidence to link IQ scores with academic achievement in the sense of ability to appreciate poetry, to write a respected history of some topic, to discourse intelligently on political theory, to solve the problem of Stonehenge, or to discover DNA. The Hawthorne effect may also be expected to play a part in the correlation between IQ and academic success. Individuals who are told (or treated as if) they have a high IQ might surely be expected to respond positively to this, whereas those who are told they have a low IQ are likely to become correspondingly demoralized. A similar line of reasoning must cast doubt on related claims about income, prestigious jobs, and so forth. The statistical data need not be in doubt, but there are a number of rather obvious reasons for expecting positive correlations between, for example, IQ, academic success, and well paid jobs. None of this gets us any nearer to judging a person's intelligence.

At this point we come full circle: one reason that there is no evidence of a correlation between high IQ as measured by standardized tests and intelligence is, of course, that there cannot be any such evidence in the absence of an adequate definition of intelligence in other terms. There have been various philosophical attempts to analyze the concept of intelligence (Barrow, 1993; Kleinig, 1982; Ryle, 1949), but these are routinely ignored by empirical workers in the field of IQ tests. If the philosophical work done on the concept of

intelligence were recognized, it would become immediately obvious that IQ tests do not measure intelligence and that there is no evidence and no obvious reason to suppose that there is any connection between IQ, as measured by standardized tests, and intelligence.

None of the above is to deny either the obvious truth that there is a neurophysiological basis to intelligence or the likely fact of genetic input. We know very well that, to take the extreme case, severely brain-damaged people cannot do certain things. The state of the brain, one may say, both limits and enables the development of intelligence. But the brain is to be distinguished from the mind, and it is the latter concept that is related to intelligence (Searle, 1984). The sad truth is that what Herrnstein and Murray see as a brave and heterodox championing of a generally condemned theory of intelligence is in fact mere clinging to an outworn methodological orthodoxy that betrays little understanding of the nature of the problem, which is essentially philosophical. Three of the six points they make at the outset of their book are:

1. There is such a thing as a general factor of cognitive ability on which human beings differ.
3. IQ scores match, to a first degree, whatever it is that people mean when they use the word "intelligent" or "smart" in ordinary language.
5. Properly administered IQ tests are not demonstrably biased against social, economic, ethnic, or racial groups.

The wording of each of these claims (and the specific reference to "beyond ... technical dispute" in the eyes of "top experts on testing") suggests that the authors take them to be empirical claims. Unfortunately, essentially they are not. The issue of whether there is such a thing as a general factor of cognitive ability is not the issue of whether, given that there are various general factors of ability, there is an intellectual one. The questions are what on earth is meant by a generic ability and whether it makes sense to think in terms of generic mental abilities (Barrow, 1990). Many powerful philosophical arguments have been adduced to suggest that it doesn't. But Herrnstein and Murray do not appear to be familiar with these arguments nor to appreciate that, whether convincing or not, arguments of this type are what need to be reckoned with. Similarly, it is hard to believe that IQ scores could match "whatever it is that people mean," given that people may mean different, even contradictory, things by "intelligent"; and the claim could not in any case possibly have been substantiated in the absence of a distinct articulation of whatever it is that people do mean. Finally, the claim that "properly administered IQ tests are not demonstrably biased," indicates yet again that the authors imagine they can settle the matter empirically. But the issue, as I have briefly illustrated above, is first and foremost one of considering the coherence of assuming that any given test item is supracultural. Whether one's understanding of oarsmen and regattas is in fact the product of one's social milieu is, of course, an empirical question. But the prior, nonempirical question is whether it is plausible to suggest that this and all the other elements like it in all the tests in use are somehow above and beyond consideration of class, race, gender, and so forth. It certainly isn't plausible to me.

None of the above implies that, on its own terms, Herrnstein and Murray's thesis is false, nor that some of the suggestions they make in the second half of the book are not sensible. Claims such as that "whites with IQs in the bottom 5

percent of the distribution of cognitive ability are 15 times more likely to be poor than those with IQs in the top 5 percent" and that "if tomorrow all job discrimination regulations based on group proportions were rescinded, the United States would have a job market that is ethically fairer, more conducive to rational harmony, and economically more productive, than the one we have now" may both be true. But the former is of no very obvious significance, and the latter neither follows from it (or similar claims relating to IQ) nor depends on it. Indeed, it is instructive that they remark of the latter claim: "We cannot prove that the proposition is true." But as a matter of fact they could, or at least they could attempt to, provided they understood that attempting to "prove" or "establish" such a claim requires philosophical argument rather than empirical data about IQ.

The difficulty the authors have in breaking free from the restraints of their scientism is illustrated well enough by some of their remarks on criminality. They are well aware that despite a strong correlation between low IQ and criminality, this does not mean that one should expect a person of low IQ to be criminal. As they honestly point out, "the great majority of people with low cognitive ability are law abiding." Furthermore, they concede, people are correct to maintain that by and large criminals come from "the wrong side of the tracks." But, they add, "the assumption that too glibly follows ... is that the ... social disadvantage is in itself the cause of criminal behavior." So far so good. They are right to stress that the correlation does not establish cause and effect. Indeed, in common with most researchers in this and similar fields, they repeatedly say throughout the book that a correlation is just that and is not proof of cause and effect. Alas, just like those other researchers, they also repeatedly draw inferences and make statements that *are* causal. Thus here they immediately continue: "That is not what the data say, however ... much of the attention now given to problems of poverty ... should be shifted to ... cognitive disadvantage." But there is no warrant whatsoever for the "should." The data themselves say nothing about whether we should focus on social disadvantage or cognitive disadvantage. They say only that many criminals come from the wrong side of the tracks and many of them do poorly on some rather peculiar, and in themselves trivial, tests.

Similarly, IQ testers need to give more thought to the point that there is not simply a problem of capturing all possible independent variables in one's research design, but a possibly insoluble problem in that the varying conjunction of discrete variables may itself be a variable. They also need to give more thought to the logical implications of the observation that in various respects test scores are improving. True, the commonsense position first advanced by Plato that one's intellectual performance was partly a product of heredity and partly environment allows one to say that any changes are due to environmental factors. But the more one recognizes that one can improve IQ scores, the less the allegedly innate factor would seem to matter.

I don't personally have any doubt that to some extent one's intelligence is a function of heredity, and I share the authors' view that to some extent we are simply socially afraid of asserting that some people are more intelligent than others. I also share their concern that "too few educators are comfortable with the idea of the educated person." However, the person who does well on IQ

tests has nothing necessarily to do with either the intelligent or the educated person, and, sadly, North America's longstanding obsession with trying to measure intelligence has itself played an enormous part in turning the school system away from any serious concern for educating the intelligent.

Note

1. There are, of course, some subscales that are consciously concerned with the effects of education. My point in the main text is related to the general desire (and need, given the perspective in question) to develop tests that are not affected by education.

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The Bell Curve: Rising Fears, Fallen Dreams

To begin, let me admit that much of the detailed evidence and argument presented in *The Bell Curve* (Herrnstein & Murray, 1994) is beyond my ability, or willingness, to appraise on scientific grounds. Though I maintain serious reservations concerning Herrnstein and Murray's conclusions about race and intelligence, I find their more general thesis describing the association between social behaviors and intelligence plausible. I wish to examine the implications of the latter with respect to a principle of equality; for I believe that the authors are largely correct in claiming that without instituting certain changes we will drift inexorably toward a custodial state. I also consider the extent to which particular changes the authors themselves recommend might correct such a drift.

Before I elaborate these ideas, I want to remark on my emotional response to the book. Without doubt, *The Bell Curve* is one of the most disturbing works I have read. While reading it, I often found myself thinking, "Oh, this must be wrong! This is terrible!" I want to try to elucidate what gives rise to this response, for I think I am correct in supposing that my reactions are not unique. As Herrnstein and Murray clearly realize, their theories evoke many concerns and fears. However, freedom is often fearful and painful. Intellectual freedom, if we are to exercise it responsibly, requires that we confront distressing issues and questions, and yet consider them fairly in the light of reason. What, then, are the specters that Herrnstein and Murray raise?

Perhaps the most haunting is the notion of the cognitive partitioning of society. A social hierarchy based on intelligence calls to mind such anti-utopias as Huxley's *Brave New World* (1977). More frightening still is the fact that Herrnstein and Murray's cognitively stratified society need not rely on sophisticated biological engineering, as Huxley's does. We need not tamper with developing embryos to ensure the production of alphas and epsilons in succeeding generations. The social and reproductive isolation of the different cognitive groups will successfully perpetuate the distinct classes. Furthermore, that an increasing proportion of freedom and power will reside with our alphas appears inevitable.

It is not only contemporary authors who have described societies stratified by intelligence. In Plato's *Republic*, Socrates describes the just state as one in which each man knows his role and keeps to it, be it the role of guardian, auxiliary, or artisan (Cornford, 1941). However, Socrates also tells us that each person is born with inherent attributes that suit him or her for one role rather than another. The myth of the metals, as it has come to be known, postulates different proportions of precious and base metals in the souls of different

classes of men. Gold, the metal that makes up the guardian's soul, is the metaphoric equivalent of intelligence. Plato's guardians are Herrnstein and Murray's cognitive elite.

It is one thing to entertain Huxley's and Plato's ideas, and quite another to consider Herrnstein and Murray's. Huxley's fiction is set some 500 years in the future. Plato's speculations were voiced 2,400 years in the past. Herrnstein and Murray speak of today.

Yet what is so worrisome about a cognitive elite? What disturbs so many of us about a society stratified by intelligence rather than title or wealth? It is simply this. Neither status nor wealth are heritable in the sense that intelligence is. The former are social constructs, dependent on the conventions of a society, and as such are subject to change. In contrast, intelligence is heritable biologically rather than socially. It comes with a passing on of genes, rather than the passing on of titles or estates. Hence a cognitively stratified society will be much more resistant to change, more firmly entrenched, more readily perpetuated.

Any social stratification is objectionable. Why? Because when we speak of a stratified society we speak of one with differential access to social goods, such as income, education, job opportunities, health care, and so forth. How much this access differs, and in terms of what particular goods, may vary. Hence I think that most of us would find Plato's republic a more desirable place to live than Huxley's brave new world. However, common to all such societies is the fact that the greatest power and freedom reside with the elite. As one descends the social scale, no matter how shallow the gradient, there is increasingly less choice and less chance to realize one's individual needs, desires, or interests.

If unequal access to social goods arises purely because some people merit the award of these goods through their own efforts, and if everyone has an equal opportunity to compete, then such unequal outcomes might be justified. In other words, if we start with a level playing field and let everyone play, perhaps we are right to consider the winnings fair. What Herrnstein and Murray make abundantly clear is the fact that the playing field is anything but level. Furthermore, given the largely heritable nature of general intelligence, it is difficult to imagine how we could level the field without resorting to Huxley's biological engineering to ensure that only alphas are born. Therefore, if we want a fair society, a just society, we must first recognize that it is not a level playing field. It is this fact that Herrnstein and Murray attempt to establish. Second, we must accept that the rewards of society, and access to social goods generally, are unfairly distributed; for such awards accrue to those who are merely born with high intelligence. In paying more for computer programmers than for window washers, for engineers than for plumbers, society rewards intelligence. However, we largely inherit intelligence; and for that part we don't inherit (our childhood environment) we are not responsible either. Thus to allocate social goods on the basis of intelligence is unjust. Although people may be accountable for what they do, given a certain level of intelligence, they are patently not responsible for their level of intelligence *per se*, and hence ought not to be rewarded or deprived of social goods on the basis of this criterion.

This is saying something more than "Life is unfair." What I am arguing here is that our allocation of social goods is unfair. Although there may very little we can do to rectify life's injustices, there is much we can do to amend society's.

This, then, is the specter that Herrnstein and Murray raise: a cognitively stratified society that, because of the heritable nature of intelligence, is remarkably fixed and resistant to change: a society, moreover, that is constructed to serve the interests and perpetuate the advantages of the cognitively elite. To the extent that disproportionate access to social goods accrues to this elite by virtue of a largely inherited trait, such a state is unjust. I find it repugnant and threatening, for I have no reason to believe that intelligence fosters virtue, or that cognitive ability increases the likelihood of a fair consideration of the interests of others. I am frightened by the thought that the foundations of this state are already firmly in place. So I can name my fears. I can understand why I found so much of *The Bell Curve* distressing to read. I am left with the question: what can be done? Have we any means to dismiss this haunting specter?

This brings me, though somewhat circuitously, to a consideration of the principle of equality. Many of the ideas I develop here can be found, in a more elegant and succinct form, in the work of Singer (1979). In the second chapter of his book *Practical Ethics*, Singer elaborates a principle of equal consideration of interests. It is in this respect, he argues, that all people are to be considered equal. Singer suggests that the important human interests include: "the interest in avoiding pain, in developing one's abilities, in satisfying basic needs for food and shelter, in enjoying friendly and loving relations with others; and in being free to pursue one's projects without unnecessary interference from others" (p. 21).

The first four interests appear to be independent of cognitive ability, inasmuch as they can be considered common to all, regardless of intelligence. The last of Singer's (1979) interests, however, will be influenced by intelligence. For example, the projects that an Einstein, a Wittgenstein, a Mozart might wish to pursue would differ substantially from those I would choose. So Singer's notion of human interests allows for individual differences. His principle of the equal consideration of interests simply prescribes an equitable provision for common interests and the freedom to pursue such individual projects as one's abilities and experience might engender.

With respect to individual differences and the diverse projects such differences imply, clearly Singer's (1979) principle entails equal freedom for all. Although my pursuits may not be interfered with, at the same time they may not impede the pursuits of others. Thus if one of my projects is the accumulation of sufficient wealth for a financially secure and comfortable life style, my means of realizing this end must not be at the expense of the interests of others. It is on these grounds, for example, that Singer illustrates the indefensibility of slavery. On these same grounds, we can clearly see that a state that rewards heritable intelligence with a disproportionate share of the social goods contravenes the principle of an equal consideration of interests. It is through our allocation of social goods such as income, education, and health care that we allow for the realization of important and common human interests. To the extent that we structure our society so that a certain group has greater access to

these social goods, to that extent we put the interests of the favored group before the interests of others.

On what basis could we possibly justify such inequity? Society rewards those who are lucky by birth, through the random combinations and permutations of the genes. At the same time, our social structure impedes the realization of the interests of those less lucky. This simply doesn't make sense to me.

Let us allow that a principle of the equal consideration of interests is an ideal toward which a society concerned with justice must strive. Given this, I wish to examine one or two suggestions that Herrnstein and Murray put forth in their final chapter.

First, it is important to note that there are intimations that the authors recognize some of Singer's human interests in their description of "a society in which every citizen has access to the central satisfactions of life" (Herrnstein & Murray, 1994, p. 551). They write:

people can, through an interweaving of choice and responsibility, create a valued place for themselves in their worlds. They can live in communities—urban or rural—where being a good parent, a good neighbor, and a good friend will give their lives purpose and meaning. They can weave the most crucial safety nets together, so that their mistakes and misfortunes are mitigated and withstood with a little help from their friends. (p. 551)

It is clear from these and similar statements that the authors are concerned with the satisfaction of important human interests irrespective of intelligence or race. They recognize too that by focusing on individual rather than group attributes, we can remedy "the anger, the hurt, and the animosities" that otherwise continue to grow (p. 550). They cogently argue that it is within the context of local community, rather than government policy, that the individual is most likely to be treated as such. It is to the community, essentially the neighborhood community, that we must turn to effect the satisfaction of many human interests. Herrnstein and Murray claim:

In a decent postindustrial society, neighborhoods shall not have lost their importance as a source of human satisfactions and as a generator of valued places that all sorts of people can fill. Government policy can do much to foster the vitality of neighborhoods by trying to do less for them. (p. 540)

I want to argue here that Herrnstein and Murray's focus on the individual and the local community can do little, given the present and predicted structure of society, to promote genuine equality of the consideration of interests.

First, consider their injunction to appraise people in terms of individual particulars, rather than in terms of the general group attributes, be the group racial or cognitive. Although this is necessary, it is not sufficient. In any society as stratified as ours, to ignore the group is to ignore an influence that strongly shapes individual merits and weaknesses. Because our society allocates social rewards differentially to groups, group membership affects the likelihood of an individual's acquiring particular traits and skills. For example, although intelligence may be heritable, learning to use one's intelligence, coming to know its limitations and developing its strengths, are not. Such learning, I suggest, is part of education: one of the social goods differentially apportioned to groups. Hence to promote strict individualism and to claim that "group differences can

take their appropriately *insignificant* place in American life" is to miss the forest for the trees (p. 550, my emphasis). By way of analogy, it appears that intelligence is determined by neither nature or nurture exclusively. In the same way, an individual person is the exclusive consequence of neither self-determination nor social determination. Both factors must be taken into account if we are to ensure an equal consideration of interests.

Second, Herrnstein and Murray's admonition that we look to community to realize many human interests is also unlikely to rectify present and future inequities. Again, given a stratified society and the physical isolation of different classes, it is apparent that certain neighborhoods will have more resources than others when it comes to satisfying human interests. We already recognize spatially localized populations as relatively homogeneous in many important respects, not least of which may be cognitive ability. Although people of any intellectual level may sometimes turn to friends and family for purpose, meaning, and support in their lives, the resources of some friends and families may be woefully inadequate for an effective response to these needs. Given today's level of social stratification, it seems to me unreasonable to suggest that communities can equally well promote access to "the central satisfactions of life" (p. 551). If stratification and class isolation continue, as the authors assure us will happen, how much less likely are we to see adequate communal support in less privileged neighborhoods? Hence reliance on community does little or nothing to alleviate the present or future unequal consideration of interests.

In the final chapter of *The Bell Curve*, the authors argue for a variety of policy prescriptions, of which I have examined only two. I suggest that it would be worthwhile to subject all their recommendations to careful review in the light of a principle of equal consideration of interests. Although space prohibits such scrutiny here, it is worth noting that Herrnstein and Murray allow that "Our views on all these issues are decidedly traditional" (p. 534). I think it fair to suggest that, as a consequence of their traditionalism, many of their suggested policies rest on unnecessarily narrow conceptions of equality, freedom, individualism, and community. However, I leave the justification of this claim to another time.

In closing, I believe the authors present their theories, their evidence, and their proposals in the genuine hope that such work may help ameliorate serious social ills. It may well do so, if only by virtue of the argument and debate it is bound to generate. Further, their descriptive claims, even if true, need not necessarily preclude a just society. What is required, however, is a careful consideration of their policy recommendations from a perspective that encompasses an equal consideration of interests. Without reformulation based on this principle, I fear that much of what they advocate will perpetuate and exacerbate the current injustices that characterize our society, to the detriment of all.

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The Bell Bottom

Herrnstein and Murray (1994) have produced a book that is concerned with intelligence, heritability, race, and social policy in the United States. The argument goes like this: blacks are dumber than whites who in turn are not as smart as yellows (but whites are only a little bit more stupid than Asians). You don't need to worry if you belong to a stupid race; if you are reading this journal you are probably OK. All that it means is that your race is dumb and you are a lucky exception. This can't be helped; it's a matter of your gene pool and it's not your fault. It's sort of like each race has only so much intelligence to spread around. When intelligence is doled out, some individuals get a bunch of it, but others only get a little bit.

Anyway, why make a big deal about intelligence? Normal and low intelligent people can have some good qualities. This is fortunate; otherwise you would end up with a bunch of dumb people who were really awful. Also, you can hate a smart person but cherish an idiot because of that individual's accomplishments and characteristics. There is even a small chance that intelligence is due to your environment. Although Herrnstein and Murray make these points, there are still reasons to be concerned about intelligence.

It seems that the more dimwitted the person, the larger, on average, is that person's family. We don't know why this is the case; maybe they have few interests and lots of time for purulent thoughts. Of course, deeply stupid people don't have large families because most of them can't figure out what to do to get a bunch of kids. This latter point is not directly addressed in *The Bell Curve*, but we can be reasonably sure that Herrnstein and Murray would agree that it is a fortunate fact about the profoundly stupid. When the incredibly dumb did manage to figure out the mechanics of reproduction they were mostly sterilized. Putting the issue of profoundly stupid people aside, it turns out that in the US the ratio of moderately dumb to smart people has been increasing: that is, the United States of America is turning into a nation of morons. Canadians have recognized this trend in the American population for some time, but have been afraid to point it out.

A Brief History of Intelligence

In the olden days of psychology, the French psychologist Alfred Binet constructed a test that was designed to identify areas of strength and difficulty for French schoolchildren. Many psychologists, however, reasoned that the test measured how intelligent the kids were, rather than what they had missed in school. Jumping ahead in the story of intelligence, English and American psychologists got real interested in stupidity. This was especially true for

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American psychologists who were protecting the United States from a potential wave of dumb immigrants, and English educators who were required to separate dustwomen, janitors, and nurses from executives, engineers, and physicians. These psychologists needed reliable tests of intelligence and they made a whole bunch of them.

A major advance in intelligence occurred when Spearman found out that people really had intelligence. He found this out by using factor analysis. The location of intelligence had been suggested by Galton and others as more or less in people's heads. So by the turn of the century intelligence had been discovered and pinpointed. Once intelligence had been discovered a number of educators, psychologists, and others pointed out that it was inherited. This was good news because smart people could be mated to improve their race and dumb people could be sterilized. Also, this knowledge saved money, as it was obviously a waste of time and resources to try to boost the intellectual skill of poor and stupid kids.

Social Policy

Herrnstein and Murray rely on these facts; intelligence is a real physical entity that is passed from generation to generation. Presumably, if your mom and dad were a bit light of a full load, you stand a good chance of ending up on the dull end of the continuum. In modern America, social contingencies of reproduction favor dumb people and they are going to continue to increase. So what is the solution to this problem?

The solution is a typically American one. Return to the family values of old-time America as set out by the founding fathers of the country. Turn your .357 magnums and bazookas into friendly hunting rifles, get married and stay married, help your neighbor, just say no, join the Republican party, read *Readers Digest*, eat healthy food three times a day, and shake hands a lot. Once this is done, stupid people will feel good about themselves and they will get along better with smart people. All of this will help to restore people's dignity, especially if welfare is eliminated.

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The Time Machine: The Next Generation

This attempt to circumnavigate *The Bell Curve* (Herrnstein & Murray, 1994) falls into three parts. The first has to do with the nature of social narratives (née social science) and the implications of those qualities for understanding *The Bell Curve*. Although there is an extensive literature of the genre, this essay draws particularly on Anderson (1981) and Postman (1992). The second, which builds on that foundation, refers mainly to H.G. Wells' (1895) *The Time Machine*, a remarkably prescient treatment of the theme of *The Bell Curve*. In the third I explain why the book ought to be burned.

What we have called social science can be laid out along a tapered strip or cone. At the pointy end we find questions to which we have secure answers. We have close to definitive ways to teach basic facts in arithmetic; we know how to find out, if an election were held today, how people would be likely to vote; we know which children's string figures can serve as cultural markers that can trace prehistorical migration routes in the Pacific; and so on.

A little farther along the strip we become less certain. We do not know what is the best way to teach long division or integer arithmetic; after a half-century of intensive efforts we are not certain as to how we ought to begin to teach children to read; and we do not know what the long-term effects of drug therapy are for highly active children. Questions of this sort are too convoluted, are too interactive, and entail too much feedback to allow for either reductionism or linear models. Instead of "answers," we must create what Cronbach (1971) and Maguire (1982) call *nomological networks*—syntheses of research, professional lore, and logical analysis that are probably better guides to practice than is street lore. Well along the strip we find what we will for now call large-scale social science—the zone of administrative "theory," "theories of learning," social "class," the Coleman Report, and the subject matter of *The Bell Curve*.

Anderson (1981), who should be cited more often than he is, summed up what had been decades of earlier criticism when he wrote that large-scale psychology is a *bogus science*. He shows clearly that no matter how we partition it, large-scale psychology does not satisfy any reasonable criteria for being considered a science, and to the extent that it pretends to belong in that company is a sham. We should regard it, he concludes, as a collection of belief systems. The same can be said of all large-scale social science. It is a collection of narratives, not science.

Jackson (1970) made the same point in what has become a classic underground reprint, "Is there a best way of teaching Harold Bateman?" The question, he argues, has no meaning. Like many others, Anderson and Jackson are

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quick enough to point out the flawed conceptualization of large-scale social science, but rather short on recommended alternatives.

That is what makes Postman's (1992) essay noteworthy. He begins by reviewing its defects, and comes to the same conclusion; what we have called social science is, in fact, a collection of narratives—possibly instructive stories. The *New York Times*, he says, should cease reporting it on its Science page. But it is the remainder of his essay that matters. He rushes to make it clear that he does not mean that large-scale social science need be *only* storytelling. It can be a branch of moral theology, and as such can be most influential. It has had, and can have, major social effects.

A novelist—for example D.H. Lawrence—tells a story about the sexual life of a woman, Lady Chatterley, and from it we learn things about the secrets of some people, and wonder if Lady Chatterley's secrets are not more common than we had thought. Lawrence did not claim to be a scientist, but he looked carefully and deeply at the people he knew and concluded that there is more hypocrisy in heaven and earth than is dreamt of in some of our philosophies. Alfred Kinsey was also interested in the sexual lives of women, and so he and his assistants interviewed thousands of them in an effort to find out what they believed their sexual conduct was like. Each woman told her story, although it was a story carefully structured by Kinsey's questions. Some of them told everything they were permitted to tell, some only a little, and some probably lied. But when all their tales were put together, a collective story emerged about a certain time and place. It was a story more abstract than D.H. Lawrence's, largely told in the language of statistics and, of course, without much psychological insight. But it was a story nonetheless. One might call it a tribal tale of one thousand and one nights, told by a thousand and one women, and its theme was not much different from Lawrence's—namely that the sexual life of some women is a lot stranger than and more active than some other stories, particularly Freud's, had led us to believe ... I do not say that there is no difference between Lawrence and Kinsey. Lawrence unfolds his story in a language structure called a narrative. Kinsey's language structure is called exposition. These forms are certainly different, although not so much as you might suppose. (p. 13)

And, toward the end of his essay,

Like moral theology, social research never discovers anything. It only rediscovers what people once were told and need to be told again.... The purpose of social research is to rediscover the truths of social life; to comment on and criticize the moral behavior of people; and finally, to put forward metaphors, images, and ideas that can help people live with some measure of understanding and dignity ... [these] stories are rather more important than those of other academic storytellers ... We are obliged, in the interest of humane survival, to tell tales about what sort of paradise may be gained and what sort lost. We will not be the first to tell such tales. But unless our stories ring true, we may be the last. (p. 18)

Now, to some of the stories, particularly science fiction. The genre has attracted no more than its share of insightful tellers of tales, but since Ionian days those it has attracted have found its flexible parameters well suited to social commentary and speculations. At its best, the genre allows a few arguable or even improbable scientific premises, but from that point on, the science must be impeccable and the yarn is intended to work out the interaction

between that hypothetical world and the human condition. One of the first outstanding modern writers who exploited that freedom was H.G. Wells. The parallel between *The Time Machine* and *The Bell Curve* is very close, closer than even Postman would have thought possible.

Wells used a time traveller to project 800,000 years into the future his speculation that we are on the way to partitioning the human race into two species; the gentle, artistic and child-like Eloi, living in an above-ground paradise, and the disgusting subterranean Morlocks, the world's technical slaves. Wells has his time traveller point to the signs of the future split in contemporary London and adds,

And this same widening gulf—which is due to the length and expense of the higher educational process and the increased facilities for and temptations towards refined habits on the part of the rich—will make that exchange between class and class, that promotion by intermarriage which at present retards the splitting of our species along lines of social stratification, less and less frequent. So, in the end, above ground you must have the Haves, pursuing pleasure and comfort and beauty, and below ground the Have-nots, the Workers getting continually adapted to the conditions of their labour. (p. 63)

Herrnstein and Murray tell the same story. It fully satisfies the criteria and is excellent science fiction. Beginning with one or two arguable but not improbable premises, they argue that since roughly the time of Wells we have sought to provide ways for the intelligent to rise through the social strata, and that more often than not it has worked. Far more than was the case in Wells' time or at any other time in history, they argue, the intelligent are now gathering above ground and the unintelligent are being sent below.

The parallels between the two stories continue. Wells' time traveller discovers a passageway to the lower regions and, out of curiosity, tries to ask the Eloi what is to be found below,

They seemed distressed ... Apparently it was considered bad form to remark these apertures; for when I pointed to this one and tried to frame a question about it in their tongue, they were still more visibly distressed and turned away. (p. 62)

Just so. As long as Wells' world lay 800,000 years in the future, academics could be charitable and could perhaps even consider its biting commentary on contemporary England to be a cautionary tale. But when Herrnstein and Murray tell the story in expository rather than narrative language, discover the channels to the nether regions, and decide to ask questions about what is down there, we become distressed. It is bad form to "remark these apertures."

Writing reviews of *The Bell Curve* is a thriving cottage industry. One of the best is Bernstein's (1995) *The Poor Person's Guide to The Bell Curve* (presumably on account of the current hard-cover price of the book). He is the only reviewer I know of who admits to not having read the book on the grounds that doing so would spoil all the fun, but he is certainly not alone. Academics who do actually read all of it are in for a surprise. Given a few arguable but conventional assumptions, and supposing that it *is* science, it is almost a paradigm of how large-scale social science ought to be done; it is well "researched" and well balanced. Again and again, Herrnstein and Murray dismiss simplistic con-

clusions and call attention to varied possible interpretations of their massive data. And yet Wells is right. Academics in the main are "visibly distressed and turn away." And they do so because Postman is right. It has little to do with science; *The Bell Curve* is bad moral theology.

We are obliged to tell tales about what sort of paradise may be gained and what sort lost; help people live with some measure of understanding and dignity. And on those grounds we must turn away from *The Bell Curve*. One problem is that the cognitive-ability filter has not been so effective as Herrnstein and Murray may believe. Few reviewers seem to have got to the last few pages in which they point their moral, that we ought to tailor our social interventions to a new reality, and there are ample signs that there are larger numbers who are prepared to take the tale as an excuse to further disengage polite society from the Morlocks; to gradually deprive them of dignity, decent schooling, health care, and adequate nutrition.

We therefore have good reason for preferring Gould's (1981) narrative *The Mismeasure of Man*. Better to be told that we may be able to breed dogs for intelligence and temperament, but not people, and better to believe that given the opportunity virtually any child can become whatever he or she pleases.

So what to do with *The Bell Curve*? Burn it. Or at least do to Herrnstein and Murray what we did to Arthur Jensen: dismiss them as misguided academics who are playing out an outdated and simplistic theory of intelligence. Their story, and H.G. Wells', may well turn out to be prescient, but we have a better chance of avoiding that fate if we consider too close an examination of the Morlocks to be in bad taste and turn away.

That's how moral theology works.

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And Academic Sexism Too: A Comment on *The Bell Curve*

It is not unusual for individuals to assert scientific objectivity as a cover-up for a specific ideological position and to use purportedly scientific data to suggest or defend a particular type of social policy agenda. Gould (1981), Sayers (1982), Tavris (1992) and many contributors to Harding (1993) demonstrate quite clearly how science has been used to support, among other things, the argument that social inequalities have a biological basis or are genetically inherited and thus natural, right, and good. And, as McWilliam (1987) points out, "it follows that those seeking a greater measure of 'equality' are seeking to alter what is natural" (p. 67). Herrnstein and Murray's (1994) book *The Bell Curve: Intelligence and Class Structure in American Life* is simply part of a continuing historical pattern in which science is called into service for racist and sexist purposes.

Although critical reviews of *The Bell Curve* have focused on its shaky claims about race, heredity, and intelligence, little attention has been given to the sexism implicit in much of the book. However, like the "scientific" approaches of craniometry and eugenics, Herrnstein and Murray's methods and arguments reveal not only fixed attitudes toward African-Americans, but a deep-seated ideological position on the role of women. Indeed, in what reads like a naive and simplistic faith in intelligence testing that could easily be dismissed if it were not so dangerous, the authors sound remarkably like their 19th- and early 20th-century predecessors. The craniometrists, however, actually measured something that could be measured, namely the size of the brain, although they were mistaken in their interpretation of what brain size meant. Through their science, they established that the brains of non-Europeans were smaller than those of Europeans. Because brain size was equated with mental ability (the larger the brain, the brighter the person), it was argued that non-European groups were mentally inferior and thus would actually benefit from subjugation by European populations. This, then, became the biological justification for slavery and colonization. When it was also established that women's brains were smaller than men's, scientists and physicians, among others argued that this established women's mental inferiority, which because it was "natural" was not amenable to change through education. Women's smaller brain size, then, was used to explain why educational reform would not be of any use in correcting women's lack of intellectual achievement and the policy consequence was to deny women access to better and higher forms

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of education. In this tradition, Herrnstein and Murray's ranking of humans by cognitive groups leads to similar policy conclusions about education. Low cognitive groups, which coincidentally are dominated by African-Americans according to the authors, are not likely to benefit from educational interventions, and indeed funding should be channelled away from programs for the disadvantaged to programs for the gifted. Of course, Herrnstein and Murray try to soften the implications of this position by acknowledging that some individuals in all groups are in the high cognitive range, but the force of their argument is clearly that we should divert educational resources to the privileged and accept that "many people will not reach the level of education that most people view as basic" (p. 436).

To give Herrnstein and Murray credit, they do not suggest that women's intelligence is inferior to men's. However, their views on women's role in society is quite clear. Women belong in the home raising children, and men belong in the work force. They speak of the existence of the traditional nuclear family as "a universal law." Citing the early 20th-century work of Bronislaw Malinowski, they reassert his claim that a group consisting only of the mother and her offspring is "sociologically incomplete and illegitimate" (p. 177). This one source is used to justify the labeling of children born to single mothers as "illegitimate" and the ferocity and lack of feeling with which they attack "illegitimacy" establishes a clear line to the policy position taken by elements of the radical right in the United States. In fact, Herrnstein and Murray argue that the policy intervention most likely to work in raising the cognitive ability of the population as a whole is adoption at birth from a bad (i.e., single mother) family environment to a good one. They explicitly want to turn the clock back to the period before the 1960s when single, pregnant women for a time gave up their children for adoption at birth. There is an obvious contradiction here between their argument that intelligence is largely inherited and this one that clearly gives a large role to environment.

Herrnstein and Murray argue that marriage should be returned "to its formerly unique legal status" and that "marriage once again become the sole legal institution through which rights and responsibilities regarding children are exercised" (p. 545). Because it is not at all clear why, using their terms, two low-intelligence parents are any different from one low-intelligence mother, except as an ideological principle, and why the presence of low-intelligence fathers (men from the group given to more violent and criminal behavior according to the authors) should mediate neglect and abuse in the home, one can only conclude that Herrnstein and Murray's real agenda is reinforcing the patriarchal family. In their policy prescription, Herrnstein and Murray also suggest that unmarried mothers should have no rights in claiming child support from the putative father, a view that continues their line of reasoning that it is women who are responsible for pregnancies out of wedlock and women who are responsible for parenting. That is, in all their discussions of "illegitimacy," birth control, and parenting, it is women who are the center of attention. In fact, a reader could be left with the sense that immaculate conception is the main mode of reproduction among the low cognitive "underclass" in the US. Men appear miraculously to receive full attention in discussions of employment and crime.

Despite their occasional bouts of denial, Herrnstein and Murray take a punitive and controlling approach to people they perceive to be outside of the cognitive elite, and their take on science, their shaping of data, and their policy recommendations are strikingly like those of the eugenics movement of the earlier decades of this century. Indeed, the parallels in language and in policy prescriptions are rather remarkable. One of the leading eugenicists in Canada during the 1920s and 1930s was Madge Thurlow Macklin. A medical scientist and social conservative, she argued that the major social problem facing Canada was the rapid growth of a group of feeble-minded, mentally ill, and defective people in the population. These people were a drag on the taxpayers, tended to marry thoughtlessly, had large numbers of children they could not support properly or, even worse, they were sexually promiscuous, producing large numbers of defective, illegitimate children. Hence the defectives and feeble-minded were passing on tainted genes at a rapid rate and, because of their low mental abilities, were such poor parents they abused and neglected their children. In contrast, good middle-class families, those that were independent, hard-working, thrifty, virtuous, and intelligent, were limiting family size and as a result the overall intelligence of the population was declining. This was made even worse, Macklin argued, by an immigration policy that did not police the mental capacities of those seeking new homes in Canada (McLaren, 1990). With little variation, this is precisely the line of argument taken by Herrnstein and Murray, although they finger African-Americans for particular censure.

Although the eugenicists spoke quite openly about restricting the fertility of women of low mental abilities through sterilization, and Herrnstein and Murray's work will clearly lead many to the same conclusion, they do not go so far as to suggest this policy solution. They are forced to settle instead for what they clearly regard as weaker solutions. Painting a soft, romantic picture of a nearly forgotten time of small communities and neighborliness, they suggest efforts to force a return to the traditional family and what they see as the old middle-class values of hard work, diligence, virtue, and monogamy. They claim to want everyone to find a valued place, a place where "other people would miss you if you were gone" (p. 535), even if you were not very smart. They want to simplify life for the dull so they can cope more readily. But then they get down to their hard-nosed policy recommendations. They target poor women and children whom they argue are of low cognitive ability, by urging the elimination of the social welfare system and "the extensive network of cash and services for low-income women who have babies" (p. 548). They support programs that would encourage poor women to use birth control through easy access to safe, inexpensive, and foolproof methods. They also believe that "competency rules" should be established for immigrants and that family reunification should not drive immigration policy. Although Herrnstein and Murray make no mention of the fact, such a provision has significant gender and race components.

Like the craniologists and eugenicists before them, Herrnstein and Murray use science to argue that social divisions and cognitive partitioning cannot be stopped or changed because they are natural, based on genetics and the heritability of intelligence. In other words, a society structured by class and

race, by differential access to wealth and privilege is meant to be. This cannot be changed, but at least the lower cognitive order can be provided with bread and circuses in their own neighborhoods while males in the high cognitive group (Newt Gingrich?) get on with running the country and the world and perhaps figuring out how to ensure smart women have more babies in order "to raise the IQ" (p. 548) of American society.

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"Slow Through The Dark": A Commentary on *The Bell Curve*

I was in the Caribbean last fall (1994) when I first heard about a new book that was attempting to revive the old and hurtful stereotype of black intellectual inferiority. Friends of mine who had read about the book and its conclusions regarding race and IQ in the October 24 issue of *Newsweek* drew it to my attention. My friends' reactions ranged from mirth to incredulity. You see, in the Caribbean we are somewhat shielded from this insidious debate, so it is hard to accept that approaching the 21st century as we are, there are still scholars who are willing to believe and propagate these centuries-old and discredited notions of black intellectual inferiority. I, however, have been living in Canada since 1991 and so have had time to appreciate that Herrnstein and Murray's ideas were quite likely to reach fertile ground. The fact that by the end of 1994 the book had sold nearly half a million copies and had reached number 5 on the New York Times Bestseller List only proves my point.

I returned to Canada in November 1994 to find Charles Murray, the surviving member of the pair of authors, the darling of the media and consequently being provided with unlimited opportunities to propagate his views. That Murray's views have found such a receptive audience, although disappointing, is not at all surprising for, as Hacker (1992) argued, white people have an unhealthy fascination with race and racial differences especially as these pertain to black and white people. The fact that coverage of the book virtually ignored comparisons of cognitive ability between whites and Asians, and between classes, and focused almost exclusively on black-white differences confirms my point.

I must confess that as a black person and scholar, I have had about as much as I can take of these hateful ideas that keep resurfacing century after century, essentially unchanged, by cowardly racists hiding behind the so-called objectivity of science. We all know that scientists, even those of the so-called cognitive elite like Herrnstein and Murray, do not live in a social vacuum. They are as easily influenced by the values and assumptions of society as the rest of us. We all know that race is a hot topic, and race combined with intelligence is an even hotter one. Herrnstein and Murray knew this too, and that is why the book was written the way it was. If the authors had confined their analysis to class, although their findings would have been essentially unchanged (class and race in America being so inextricably linked), they would not have generated the interest and hence the sales that they did. Herrnstein and Murray do not come over as the dispassionate scientists that they claim to be but rather

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as cynics who willingly exploit a regrettable flaw in the American culture for their own ends.

This book has been critiqued elsewhere extensively, and justifiably, on its theoretical and methodological distortions and inaccuracies. This special issue, I am sure, will contain much more of the same. However, as an Afrocentric scholar I find it unproductive to critique comparative research, especially that comparing racial and ethnic groups, solely in terms of scientific validity, especially when science is used merely as a buttress for offensive opinions and to provide an aura of legitimacy and respectability. Instead, I want to comment on three issues. The first is the lack of respect for truth that the authors display throughout this book. The second is their willingness to encourage disharmony between groups they identify as cognitively different. And the third is their lack of interest in questions of basic justice.

Lack of Respect for Truth

Herrnstein and Murray have subverted the quest for truth, which ought to be the goal of all good researchers, to their transparent ideological aims. They attempt to disarm the reader by stating anticipated criticisms of their inferences, thereby giving the illusion of even-handedness, and then continuing blithely along their own ideological path to their plainly erroneous conclusions. Let me illustrate with a few examples.

Example 1. Despite ample evidence to the contrary, Herrnstein and Murray dismiss environmental influences on IQ scores with the mind-boggling assertion that over the last 30 years all Americans, regardless of race or class, have been provided with equal opportunities because they all have the same educational experiences. They argue that environmental effects are therefore canceled out, leaving only genetic differences to determine success. This, surprisingly, comes after a declaration early in the book that they were agnostic on the issue of whether IQ variations were caused by the genes or the environment.

Example 2. Early in the book, they insist that IQ is independent of educational attainment, but in the introduction to Chapter 12 they refer to education as the "proxy" of IQ and go on to draw conclusions about the effect of IQ from correlations with education. Throughout they refer to correlations of numerous variables with IQ, and draw causal inferences from these (in the introduction to Part III they go so far as to describe their aim as that of demonstrating causality), even though they themselves point out that causality cannot be inferred from correlations. As they claim correctly in the introduction to Chapter 16, "causal relationships are complex and hard to establish definitely" (p. 369).

Example 3. Herrnstein and Murray come to the unsubstantiated conclusion that "the success of the early waves of West Indian blacks seems unlikely to repeat itself." They go on to explain that

In his book *Ethnic America*, Thomas Sowell described the successes of West Indian black immigrants, starting from early in the 20th century, noting among other things that, by 1969, second-generation West Indian blacks had a higher mean income than whites. (p. 363)

Bearing in mind that they argue that earning potential correlates positively with “cognitive ability,” rather than coming to the logical conclusion (based on their own argument), which incidentally I do not subscribe to, that this must therefore mean that, at least in 1969, West Indian black immigrants were more intelligent than white Americans, this example of black success is dismissed out of hand as an aberration. The reasoned explanation, of course, is that immigrants, regardless of nationality, race, or creed tend to be highly motivated and oriented toward success.

Example 4. Herrnstein and Murray cite an attempt in Venezuela, among other examples, to increase IQ by special coaching and report that an increase of 0.4 SD occurred for a “conventional intelligence test.” They acknowledge that “there was no chance to see if the gain faded out or was reflected in the rest of the students’ academic performance, nor can we even guess how much a second or third year of lessons would have accomplished” (p. 400). Despite this, on page 402 they conclude that “the goal of raising intelligence among school-age children more than modestly, and doing so consistently and affordably, remains out of reach.”

Disharmony Between Groups

Through this book Herrnstein and Murray cynically attempt to encourage disharmony between groups they define as cognitively different. They clearly wish to foment fear and distrust of an alleged underclass that they portray as dangerous, unrestrainable, and totally beyond help. It is not coincidental that this underclass comprises poor people, with Africans and Hispanics heavily overrepresented. These are the people popularly perceived as disadvantaged, and the authors’ goal is to convince their readers (the supposed cognitive elite) that disadvantage with its attendant social ills is preordained, and that this underclass poses a direct threat to the well-being of the cognitive elites. I cite a few examples of how they do this.

Example 1. Herrnstein and Murray open with the formidable promise that “this book is about differences in intellectual capacity among people and groups and what those differences mean for America’s future” (p. xii). They go on to talk of intelligence as a “force for maintaining a civil society” (p. 254) and to identify those who possess this commodity (the cognitive elite) and those who do not (the underclass). In their vision of America, everyone will be confined to a “valued place” to be determined by their IQs. A warning runs throughout the book that in order to have a stable society the cognitive elite must be protected from the consequences of the low intelligence of the underclass. The authors come across as unabashedly racist, classist, and elitist, and I say this without apology, for they articulate pretty strong views about the inferiority and superiority of different groups of people and advocate that people be treated in different ways because of the group to which they belong.

Example 2. Herrnstein and Murray claim that there are too many blacks on college campuses in relation to their IQs, especially in the elite colleges. They suggest that blacks are taking the places of better qualified whites because of affirmative action and that this causes whites on campus to view blacks as intellectually inferior. They argue, improbably, that “American universities once [during the mid-1950s to mid-1960s] approached the ideal in their handling of race on campus and there is no reason why they could not do so again”

(p. 476). This is an astounding contention, for this decade describes the period immediately following the Brown decision on school desegregation when there was tremendous racial conflict on college campuses with the National Guard escorting black students onto campuses to protect them from the rage of white protestors.

Basic Justice

Herrnstein and Murray seem totally unconcerned about issues of basic justice. Their agenda is clearly ideological with the acknowledged intent of influencing social policy, and they are dismissive of concerns about social justice. Here are some examples.

Example 1. The authors rail against corrective measures based on group membership while they themselves define the problem in those terms. If, as they claim, an individual's performance is explained by his or her membership in a specific group, then it is unfair to argue against the solution being similarly race-based. It is worth noting, however, that they do not have a similar compunction when it comes to punitive measures, and advocate that these measures should be targeted directly at the offending populations as they have defined them. For Herrnstein and Murray, you reward individuals but you punish groups. A genuinely individualistic approach would be inimical to all race-based analysis, including IQ.

Example 2. Herrnstein and Murray warn repeatedly about the power of the "cognitive elite" to subvert democracy, but if they were really concerned about this danger they would encourage a greater representation and not fight against the presence of blacks and Latinos among the Ivy League sets. The racist attitudes they suggest are present among the cognitive elite—and which, they warn, may be more evident and bolder in the future—are hardly a manifestation of intelligent behavior. But they do not condemn this failing. They describe a sort of Nazi/police state that may be the future of America, which they suggest may be an inevitable response by the cognitive elite to the presence of blacks, poor whites, and Latinos among them. The fact remains, however, that if the cognitive elite were ever to arrive at a position where they could put this threat into effect, they would have to be judged by the same standards that others who perpetrate crimes against humanity are judged. The perceived intellectual disadvantages of the so-called underclass cannot be used to justify such an atrocity.

In conclusion, I maintain that Herrnstein and Murray are not the dispassionate and objective scientists they claim to be. No such being exists, especially when it comes to such a deeply personal issue as IQ and race. The issue that confronts me as a black scholar is how do I deal with such material as *The Bell Curve*? I must confess that I do not yet have the answer. I do know, however, that I am past anger. Now I feel only despair. When will it end?

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IQ and Crime: Dull Behavior and/or Misspecified Theory?

The Bell Curve (Herrnstein & Murray, 1994) has been met with the perennial torrent of criticism that greets every attempt to reduce complex social behavior to a biological basis. The reduction to genetics of important personal attributes shared across specific racial and ethnic groups courts charges of racism. But even if the book's basic premise about genetic differences proves to be incorrect or overstates the importance of genotypes, the fact remains that profound differences exist in American society in areas related to academic performance, early school leaving, and delinquency. If political conservatism makes such differences appear to be natural and intractable, we should be equally suspicious of the ideological presuppositions of learning theorists who imply that the only impediments to social achievements are those external to individuals. Neither extreme is realistic.

Increasingly, there is a recognition of the need to develop interactive models that reflect the impact of factors from various levels (Gove, 1994). In the past, proponents of IQ causation (i.e., Goring, 1913) have estimated that the correlation between mental defectiveness and criminal behavior was an impressive $-.65$! Most criminals were idiots by this estimation. Theories of hereditary feeble-mindedness and policies of sterilization and selective immigration were hastily adopted to prevent what Herrnstein and Murray (p. 343) call *dysgenesis*—the erosion of national levels of intellectual prowess. These monocausal models and the worrisome policies they abet have led criminologists to discount completely the role of IQ in delinquency: another type of extremism.

In the latest debates, researchers have argued that IQ is a better predictor of delinquency than either class or race, a situation that ought to be greeted with enthusiasm to the extent that it suggests that careers in delinquency ought to be understood on the basis of personal characteristics. However, *The Bell Curve* is explosive because it implies that IQ is an aggregate racial trait and that it is heritable. Because, the story goes, nurture differences have been leveled by

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Head Start programs, welfare and affirmative action, the relative standing of social groups that survive must arise from nature. This joint reification of intelligence and race is social dynamite, for it grounds the social hazards of poverty in biology. But neither race nor intelligence is immutable. Racial characteristics and boundaries are subject to constant movement, and aggregate levels of intelligence on a national level have moved as much as 15 points in this century (the Flynn Effect). Even if IQ is 90% heritable, that would leave sufficient room to explain IQ differences on the basis of phenotypical starvation. Our position recognizes that there are differences in the IQ scores of delinquents and nondelinquents whether estimated on official data or self-report studies. However, although the relationship between IQ and delinquency may well be real, it does not necessarily have the origins or effects suggested by Herrnstein and Murray. In this discussion we note that the effects of IQ on delinquency are mediated by gender and age in a fashion that is not readily explained by a reductionist perspective, and that the relationship between IQ, school performance, and delinquency may be spurious.

Gender and Crime

The authors limit their analysis of the relationship between IQ and crime to white men by admitting that "crime is still overwhelmingly a man's vice" (p. 245). In their analysis of the National Longitudinal Survey of Youth (NLSY), having found a negligible but statistically significant relationship between criminality and IQ among white men, one would expect to draw the same inference with respect to women. This conclusion is not borne out by studies of female delinquents (Townes, James, & Martin, 1981). Balthazar and Cook (1984) found not only that there was no relationship between female violent crime and intelligence, but also that there was no relationship between female intelligence and incarceration. Notwithstanding problems with the use of incarceration as a measure of crime, the analysis employed by Herrnstein and Murray is not supported for females who would appear to be more criminogenic than males, given their lower IQ scores. The negligible findings of the relationship between male violent offending and IQ, and the lack of a female IQ-violent crime relationship, suggests that either a different theory is required to explain female offending (which is in itself problematic) or that IQ does not hold the explanatory power attributed to it.

Females are not, however, left out altogether. Low intelligence appears to have conflicting effects depending on gender. For males it appears that low IQ predicts nonconformity, whereas low IQ for females predicts conformity (Nafine, 1987). Herrnstein and Murray's argument draws on stereotypical notions of the "nature" of women versus the "nature" of men. Women's crimes or wrongdoings have to do with reproduction and dependency, that is, becoming unwed mothers and going on welfare, whereas men's crimes arise from aggression and agency, hence the focus on violent crimes.

The idea that low IQ could cause such vastly different reactions in males and females subverts the theoretical importance of the IQ-crime linkage. Empirically we know that women are less likely to be in public situations conducive to violent crime either as victims or perpetrators (Sommers & Baskin, 1993). Simpson and Elis (1995) also note that "crime, as social action, is a 'resource' for accomplishing gender—for demonstrating masculinity within a

given context or situation. Thus prostitution draws on and affirms femininity while violence draws on and affirms masculinity" (p. 51). As well, differential sources of control, that is, formal control for males, and informal control for females, also imply that IQ has little to do with criminal involvement. These observations suggest that criminal behavior is at least as dependent on opportunity and socialization as on IQ.

Age and Crime

Herrnstein and Murray suggest that IQ tends to be relatively fixed over the life cycle. Earlier, Wilson and Herrnstein (1985) had argued that "the early onset of misconduct is one of the best predictors of a child's becoming a chronic and persistent delinquent," and "measures of aggression are almost as stable over time as measures of intelligence" (p. 242). It is surely ironic how much Herrnstein's rather brittle "learning theory" has come to reflect 19th-century ideas about the "born criminal": neither appears to accord much value to experience, nor much change arising from it. In point of fact, delinquent behavior is notoriously age sensitive. Among young men, whose intelligence is supposedly fixed, delinquent conduct rises sharply in the midteen years and declines in the early 20s. This appears to be the case across different cultural and temporal contexts. Furthermore, although most serious adult criminals were young offenders, the vast majority of young offenders do not become adult criminals. Hirschi and Gottfredson (1983) argue that it is age per se that predicts delinquent activity, that age is not a spurious measure or a proxy for a better specified cause, and that the age of first delinquency is indicative of nothing later (except to say that those people who commit a lot of crimes as adults did the same thing when they were youngsters). In other words, the tendency to engage in delinquency varies tremendously over the life cycle, whereas intelligence is supposedly fixed. Obviously the correlation between delinquency and IQ is secondary to gender and age factors. This is reflected in the evidence Herrnstein and Murray present from the NLSY.

Herrnstein and Murray employed two measures of crime: (a) self reported crime and (b) evidence of incarceration based on interviews conducted in a correctional facility. If we examine (a) in their "basic analysis" ($n=2,008$), we find that the model tested included the effects of IQ, SES, and age. Notably, age was a significant predictor ($b=-.203$) as was IQ ($b=-.269$). The original NLSY sample included respondents aged 14-22 in 1969—a range that captured only the rising change in crime and age, and not the downturn expected as youth reached their mid-20s. In the NLSY, age is as substantively relevant a correlate of delinquency as IQ. So far, so good.

In the High School Sample ($n=665$), IQ became nonsignificant and age remained a significant negative correlate of delinquency ($b=-.261$, $\alpha=.07$), as we would expect following Hirschi and Gottfredson (1983). And in the College Sample, none of the coefficients was significant, probably because neither age nor delinquency varied enough to make the test meaningful. Even allowing for the reliability of these tests, the explained variance was pitiful: 1.5% for the first model, 2% for the second. In other words, although the coefficients were significant, their explanatory power was trivial.

As for dependent variable (b), interviewed in jail, the overall models improved in terms of explained variance (9%), but the only variable that proved

significant in the basic sample and the high school sample was IQ. The strong negative coefficient ($b = -.63$, $\alpha = .0001$, $n = 1,945$) for IQ suggests that these respondents were probably highly skewed in IQ. This may occur because very low IQ correlates with incarceration, a factor one would find in populations that are not just deficient in IQ but more liable to detection, arrest, and detention as a result. In addition, IQ performance may be partially related to social class, and the resources of social class may confer an ability to evade criminal processing. Here the relationship could be indirect and still significant. In that interpretation, IQ may be conflated with SES, and the formal 5-point scale used to test SES in *The Bell Curve* is simply too crude to disentangle the two.

Last point, detention in jail, although equated with serious criminality, has other causes. It might apply to persons who do not qualify for pretrial release because they have no fixed address (i.e., the homeless), because they are in breach of conditions of probation from previous convictions, or because they are serving time as a result of a new felony and may have found themselves behind bars, or because they were determined undeserving on extralegal grounds (i.e., unemployment or gender). Of what is IQ indicative? Homelessness, insobriety, unemployment or crime? *The Bell Curve* suggests criminality, an inference that may be sound but hardly compelling in view of equally plausible alternatives. But even if we allow the correlation, what can be said of the linkage?

Education, IQ, and Crime

There are different ways to make sense of the relationship between delinquency and IQ. Herrnstein and Murray pointedly assign IQ as a causal factor: "Clearly something about getting seriously involved in crime competes with staying in school" (p. 250). The burglar probably "is not the most obedient of pupils" and the street fighter "probably gets in fights on the school grounds." School and delinquency are incompatible, and low IQ begets school failure, begets crime. Wilson and Herrnstein (1985) suggest that "it is in school that a youngster lacking intellectual skills is most likely to encounter for the first time the frustrations and failures that his or her deficits are heir to" (p. 168). Intellectual failure, we are told, makes "short term horizon" delinquent behavior ("self-indulgence") more attractive. But this line of reasoning merely defines delinquency circularly with attributes of low IQ, as if reading well was not its own form of immediate gratification that did not indulge the self. The notions of self-indulgence and immediate gratification are used to discount immoral activities that are done quickly and effectively without regard to the Protestant ethic. The myth that doing what is "good" is necessarily difficult is just that, a myth.

An IQ-delinquency model not considered by Herrnstein and Murray is the "school reaction" model, whereby "IQ may influence delinquency indirectly because it may be used as a criterion for differential treatment in the schooling process" (Ward & Tittle, 1994, p. 190; Menard & Morse, 1984). Essentially, children have many resources that they can use to maximize positive feelings and to control their environments. Boys who are larger than their classmates can use physical leverage, not by actually being physically aggressive, but by acting in a dominant way. They can also develop verbal skills and friendship networks as sources of power. But not everyone has the same resources

(Agnew, 1990). Mesomorphs—the so-called body type associated with knuckleheaded delinquents and brawny football players—are probably more likely to get away with roughhousing than 90-pound ectomorphs. We label mesomorphic power pejoratively as “impulsive” and “aggressive,” though “initiative” and “leadership” might be more positive ways of characterizing the same behavior. If institutions like schools remove children who are more physical, who “act out” more, who test the status hierarchy by fighting, then such children will attract more social control, expulsion, and negative labeling in schools and, at least initially, will do so independently of their scholastic abilities. In other words, their conduct may be labeled delinquent because it is institutionally inappropriate however much it has been successful in prior family and preschool situations.

There are other problems with the relationship between IQ and delinquency, notwithstanding the role of IQ as an exogenous variable predicting delinquency. In his review of *The Bell Curve*, Duster (1995) notes that a major problem with the book is that the role of IQ shifts from an independent (exogenous) to a dependent (endogenous) variable. “*The Bell Curve* abandons the issue of social outcomes as the dependent variable, and instead introduces the observation that ‘even when intervention programs are successful in the short run, they do not alter IQ differences in the long run’” (p. 160). But, as Duster explains, “this is completely contradictory to their fundamental thesis, that IQ is the independent variable producing social outcomes” (p. 160). The argument that Herrnstein and Murray make in the latter portion of their book is that IQ is dependent on heritability and cannot be improved by various interventions. By switching IQ from an independent to dependent variable, the crux of their heritability argument is in jeopardy, thus leaving open the possibility that IQ is not as predetermined by genes as the authors would initially have us believe.

Herrnstein and Murray neglect to examine probable conditions that may antedate low IQ, such as “parental psychopathology, temperamental disturbances, neurological problems, genetic susceptibilities and disadvantageous environmental influences” (Fishbein, 1990, p. 34). Frequently, juvenile delinquents are “multi-vulnerable” populations (Brannigan & Caputo, 1993). For example, if children present from troubled families with fractious parental relations and substance abuse; if they experience frequent neighborhood resettlements as parents separate, become sexually promiscuous before their peers, and are defiant of parental authority before they can realistically live on their own—all of which are common observations to school counsellors—then the link between school trouble, delinquency, and IQ is an interactive process. In such circumstances, delinquency may be a cause of low IQ because students may be removed, discouraged, and demoralized for metascholastic factors, and as they get older frequently absent themselves voluntarily, if surreptitiously, from school attendance. “Discipline” problems are conflated with “scholastic” problems and, unless nonphysical modalities of expression are cultivated, the school breeds children who do not like school, who are poorly motivated, and wither on the vine. They are seen to be delinquent (by teachers) from “their earliest days,” and when tested on verbal measures prove themselves to be the numbskulls they were originally conceived to be.

Family conflict resulting in inconsistent support for learning, which is associated with school absence and early school leaving, may itself lower the student's level of literacy. Poor school performance will mirror poor IQ performance, especially in the area of verbal IQ that tests for vocabulary and language use. Again, the causal link between IQ and delinquency may be spurious. Demise of family control structures and support structures may open the adolescent to unrestrained delinquent opportunities (relative to intact families) and fail to provide the family capital (emotional and otherwise) that ensures that the student's native ability is developed to its capacity. The poor IQ performance, especially on verbal and mathematical skills, which are core elements both of school curriculum and intelligence testing, are simply the reverse sides of the same coin: squandered talent. If that inference is warranted, we should not conclude that low IQ warrants apartheid, as Herrnstein and Murray suggest in terms of the "custodial state." Perhaps, rather than spending more on jails as today's conservatives recommend, society should spend more on schools.

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Intelligence and Social Policy

This article addresses the arguments presented in The Bell Curve in terms of their scientific validity for the context in which they are situated and their value as a basis for social policy in Canada. The article is organized in four sections. In the first I argue that cognitive stratification is less ominous than Herrnstein and Murray indicate, and that the meaning of stratification is dependent on the cultural context. In the second I discuss the nature of intelligence, argue that The Bell Curve relies on an impoverished view of it, and suggest that the "intelligence" data they analyze should be seen rather as measuring educational achievement. I describe some of the other limitations in their data analyses in the third section, in particular their underestimate of environmental effects. In the final section, I address two of their conclusions, dealing with removal of support from unwed mothers and their children, and with the shifting of resources from programs for the disadvantaged to programs for the gifted. I argue that Herrnstein and Murray focus too much on symptoms and not enough on causes, and that their analyses are bound to the American context. Contrary to Herrnstein and Murray, I conclude that education for all remains important and that efforts should be continued to understand how intelligence develops and how it can be better nurtured.

The Bell Curve (Herrnstein & Murray, 1994) is an important book, though flawed and dangerous. It is important because of its scope, its addressing of crucial social issues with an impressive data set, and because it raises the question of "taboo" topics in psychology and education; it has the potential to provoke much thought and debate (see, e.g., the collection of reactions in Jacoby & Glauberman, 1995). It is flawed because of the impoverishment of the concept of intelligence employed, the overreliance on one data set, the failure to recognize contextual effects that may underlie the results presented, and the scant attention given to implications. It is dangerous because its results and conclusions, especially if understood poorly and accepted uncritically, provide ammunition to those attacking whatever is left of the "social safety-net," both in the United States (the focus of *The Bell Curve*) and in our own country, and could be taken as support by those advocating much more radical and frightening steps than those addressed in the book. To address fully the merits and flaws of *The Bell Curve* would require many more than the few pages available to me here. Furthermore, the book could be addressed in terms of either the political philosophy that motivated it or its espoused scientific basis. I opt to treat the book as science and focus on four main areas: the cognitive elite and underclass, the concept of intelligence, the nature of the major data analyses, and the validity of the implications drawn in *The Bell Curve*. My goal is to point toward policy implications for Canada, but this can only be done by

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considering how valid *The Bell Curve's* conclusions are for the US context in which it is situated.

The Cognitive Elite and the Cognitive Underclass

The first major section in *The Bell Curve* is devoted to "The emergence of a cognitive elite." The basic argument is that over the course of the 20th century more and more intelligent people have been attracted to higher status occupations, those occupations have begun to *require* more and more intelligence, those occupations have become increasingly remunerative (compared with lower-status jobs), and intelligence is associated with job performance, especially for high-level jobs, but even for low-level jobs. As long as the word *intelligence* is broadly (and vaguely) defined, these relationships are not too controversial, though some may be surprised at the speed with which the changes have happened (see the next section for more on the meaning of intelligence).

This argument is quite Darwinian: a characteristic (intelligence) was around in the gene pool, but was not of paramount importance in then-extant environment. One can speculate that physical strength had been important for a long time, replaced by family status. Then the environment changed, presumably by becoming more democratic and complex. Democracy was important, to eliminate brute force as the main determiner of power and to allow social mobility. Complexity was then allowed to exert selection pressure: to master the increasingly complex world more intelligence was required. The trait that had previously been unrelated to success now was so related. Increased intelligence in the work force contributed to the increasing complexity of the environment, increasing the demand for itself. Members of the new cognitive elite increasingly mix, and therefore breed, exclusively with each other. Their children start with environmental advantages in addition to whatever genetic advantages they may have, increasing their chances of staying in the cognitive elite for another generation.

The downside of this story is the development of the cognitive underclass, those individuals whose lower intelligence does not allow them to participate fully in modern society or reap many of its benefits and whose children have little chance of upward mobility. In a classic Darwinian model these individuals fail to thrive, starve, and, most importantly, do not contribute descendants to the future. We humans usually choose not to let these forces take their course; individually and collectively we help the less fortunate around us. Sociobiologists would probably extend Darwinian theory to indicate that by doing so we are helping ensure the survival of our group's genes. Others would say that to do otherwise would be immoral. *The Bell Curve* raises the Malthusian specter of a cognitive underclass growing faster than the elite, surviving or even thriving on the back of the social welfare system. It recalls Aldous Huxley's *Brave New World* in which Alphas, Betas, Gammas, Deltas, and Epsilons were bred to have distinct levels of ability. *The Bell Curve* reminds me of Biggs' (1978) tongue-in-cheek "new Australia," in which there are four classes: managers, producers, mercenaries, and "dolbies," the last of these being welfare recipients prevented from working and rewarded for inactivity and docility.

How real is this cognitive stratification and its consequences? Stratification of some sort seems to be characteristic of modern societies, and the role of intelligence seems more plausible as complexity increases. One has only to open a newspaper to read of the bifurcation of society, one class with increasing wealth and power, whose children enter school with every advantage and aspire to be doctors, lawyers, merchant bankers, and engineers, and the other class with increasing despair and need for social support, whose children aspire to minimum-wage jobs, cleaning up after those who flip the hamburgers. The disappearance of jobs in the middle, and especially at the bottom, only contributes to the seriousness of the situation. *The Bell Curve's* contribution is to argue that increasingly the stratification will be on the basis of mental ability.

Evolutionary systems are by nature self-regulatory. Mistakes are corrected in time if important. Herrnstein and Murray pay little attention to self-correction within the system other than to argue that the social welfare system subverts self-correction. Consider a few sources of self-correction or instability in the cognitive stratification system. First, if the underclass reaches a certain threshold of despair, there is little to stop them destroying the entire system. Second, if environmental advantages are restricted to the elite class, then it becomes less possible for the more able members of the lower class to move up. The system is based on mobility; as upward mobility becomes impossible, this should lead to less success for the upper class, and the build-up of a more able, and therefore more dangerous, lower class. Third, being in the lower class is bad for your health. *The Bell Curve* reviews some of the evidence that members of the lower class have greater chance of suffering injury or violence; they probably have a greater chance of ill health, being jailed, or of dying young. None of these things contribute to success in breeding. Fourth, environments change, bringing with them the survival value of new traits. Intelligence, broadly conceived, must be polygenetic and must change in nature (though perhaps only slightly) as the environment does. To the extent that the elite isolates itself from the rest of the world, it sows the seeds of its own demise. Fifth and most importantly, one of our human traits is morality, entailing care for others. Whether seen in an evolutionary light or not, morality will be a force acting to attenuate the ill effects of stratification.

It is important to consider the *size* of the cognitive class that Herrnstein and Murray consider to be a problem. The second part of the book, "Cognitive classes and social behavior," describes the association between intelligence and a variety of social problems (more on this when I consider their data analyses in detail). The vast majority of the social problems (including poverty, school failure, welfare dependence, and crime) are evidenced by the lowest 10% or so of the cognitive distribution (after controlling for social class and other variables). Of this group, of course, only some show social problems, ranging from small percentages up to 40%, depending on the characteristic in question. Furthermore, the vast majority of the population is not really contributing to the relationship between intelligence and social problems (the graphs flatten out above -1 standard deviation). Although 10% of the US population is a large number in absolute terms, the portion of it demonstrating social pathology is not about to threaten the stability of the country. Perhaps more importantly,

these results may be the consequence of the US' peculiar history (especially with respect to race), and different social policies (e.g., better support for the poor) may alter the relationships.

The existence of cognitive stratification does not establish the *meaning* of that stratification. That different groups of people carry out different jobs and are paid differently does not automatically cast scorn on the "lower" group or invalidate them as members of society. The US may represent a relative extreme in the treatment of the less fortunate; some other societies, for instance much of Western Europe and Australia, seem to treat their less fortunate citizens with greater dignity through government action; other societies, for instance those of east Asia, may rely more on families to care for the less fortunate. Through taxation and welfare, governments can equalize incomes, regardless of cognitive status. Being on "welfare" does not carry the same social stigma in other countries as it does in the US.

We should not lose sight of the role of education in dealing with the effects of stratification, not just education designed to raise intelligence *per se* (see Implications for Social Policy section), but also education designed to impart valued job skills. Even if we accept *The Bell Curve's* arguments that intelligence cannot be raised and that job performance is correlated with intelligence, all is not lost. Education can contribute by helping individuals maximize their achievements and by helping them understand their society better. Education becomes even more critical as industrial or less-skilled jobs disappear if we want to maximize the number of persons participating in the coming "information age" society (Reich, 1995). In many cases it is also possible to change the jobs, making them less demanding of rarer skills.

Whether one likes it or not, some form of stratification seems to be occurring, especially in the US, and the chances are great that intelligence is associated with it. In the absence of comparable Canadian data, one can only speculate that the same trends exist here, perhaps at an earlier stage of development and, one hopes, with greater attenuation through the social system.

The Nature of Intelligence

The preceding section assumes a broadly based definition of the term *intelligence*. Discussion becomes more controversial once one attempts to measure intelligence, especially if one posits that intelligence is (mainly) one thing (*g* or general intelligence). The debate becomes quite polemical once the heritability of intelligence is addressed, and worse still if racial or ethnic differences are proposed. Although it is absolutely necessary to measure intelligence if it is to be studied, the other proposals are more open to debate. Herrnstein and Murray argue that intelligence has become a taboo topic (p. 1), but it is more accurate to say that the taboo is confined to the latter proposals, those concerning heritability and group differences. Over the last three decades those promoting the importance of intelligence have claimed to have the facts on their side, whereas the opposition has focused more on the moral repugnance of these hypotheses. This has given rise to another myth in the minds of laypersons (including many in education and psychology) that this is another instance of science versus emotion. Herrnstein and Murray seem keen to support this myth, taking the side of the "good" science and claiming with it the force of science in its other manifestations. One can observe that the political

right wing, especially in the US, is doing likewise at the moment, aiming to cut welfare, though they are not as likely to do so when science opposes the teaching of creationism or supports sex education, birth control, or gun control. There are, however, serious reasons to doubt the scientific validity of the proposals concerning *g*, heritability, and group differences. Science is by no means wholly on the side of *The Bell Curve*.

General Intelligence

There has been debate for most of this century whether one factor provides a sufficient model of intelligence (Kirby, 1980). Although much of the debate has focused on the data and data analyses, there has been increasing interest in theoretical interpretations. On the data and data analysis side my impression is that an official tie has been (or should be) declared. In spite of the wonders of confirmatory factor analysis, the problem remains that the factors that emerge depend on what measures have been given to what subjects, the algorithm used in analysis, and the judgments of those analyzing the data. Empirically there is considerable support for a hierarchical model, with *g* at the top and increasingly narrow, but somewhat correlated factors at successively lower levels.

With respect to theory the field is also divided. For most of this century practice has accepted the notion of general intelligence, perhaps divided into verbal and spatial components; thus the infamous but ubiquitous IQ scores. Spearman's (1904) initial characterization of *g* as "mental energy" did not help much. Although a single factor can be obtained in any analysis, it is not clear whether this mathematical entity has any psychological reality, though its convenience cannot be denied. Cognitive psychology entered the fray on the side of *multifactorial* interpretations of intelligence, arguing that the vast array of cognitive processes cannot be understood one-dimensionally. Sternberg (1988) proposed that intelligence consists of metacomponents, performance components, and knowledge acquisition components and argued that socio-cultural context and the individual's learning experience must be taken into account. Gardner (1983) has suggested seven forms of intelligence: verbal, musical, logical-mathematical, spatial, bodily-kinesthetic, and two forms related to one's intrapersonal and interpersonal skills. Das, Kirby, and Jarman (1979; Das, Naglieri, & Kirby, 1994; Kirby & Das, 1990) have argued for the importance of four factors, Planning, Attention, Simultaneous, and Successive processing (the PASS theory). Cognitive research has recently provided some support for *g* too, in the form of speed of mental processing (pp. 284-286). The multifactorial theories tend to be more optimistic about the possibility of increasing intelligence because they deal in smaller, easier-to-handle constructs; it is easier to see how "planning" might be trained than "speed of mental processing."

My point is that there is neither empirical nor theoretical agreement among scholars in the field on the status of *g*. *g* is not dead, but neither does it rule. For many scholars *g* is the question, not the answer. Furthermore, the multifactorial cognitive models offer means to understand how intelligence develops and how its development may be encouraged.

Measuring g

The vast majority of the data presented in *The Bell Curve* comes from one study, albeit a large and important one. The National Longitudinal Survey of Youth (NLSY) has collected a staggering amount of data from over 12,000 subjects, beginning in 1979 when the subjects were aged 14-22, and continuing to the present (pp. 118-120). The measure of intelligence employed was a composite of four subtests of the Armed Forces Qualification Test, word knowledge, paragraph comprehension, arithmetic reasoning, and mathematics knowledge, all administered in the second year of the study when the subjects were 15-23 (Appendix 2, for further details). This measure is then used to predict later social behavior in the 1980-1990 period.

Four points should be made about these research methods. First, no serious scientist would propose these methods a priori to answer the questions addressed in *The Bell Curve*; Herrnstein and Murray were fortunate to have access to such a large and comprehensive database, but had to live with its measures and times of testing. Second, the measures do not derive from any known *theory* of intelligence; they are merely measures that seem to reflect important outcomes (much the same can be said of most ability tests: they represent the triumph of measurement over theory; see Kirby, in press, for more on this). Third, although the subtests may be highly “g-loaded” (i.e., highly correlated with more widely accepted measures of g), they are clearly measures of school-learned knowledge and skill; thus any factor that has contributed to success in schooling is implicated in any variable these scores predict. Fourth, the measures were administered in adolescence or early adulthood after many other factors have had their influence: in no sense is the IQ score used in *The Bell Curve* a plausible measure of “raw” talent. I believe these last two points combine to provide *The Bell Curve*’s Achilles heel.

But that does not mean that the data are nonsense. Although I have not seen the tests, they seem to provide a good all-round estimate of cognitive performance where cognitive performance is explicitly understood as the unanalyzed product of heredity and environment. As such they are probably quite useful for predicting subsequent behavior, but not for understanding the fundamental causes of that behavior or the means by which intelligence develops. I suggest that the IQ variable used in *The Bell Curve* be thought of instead as “educational achievement”; this does not invalidate many of the relationships that Herrnstein and Murray present in Chapters 5-16, but it makes some of them less profound (Is it any surprise that students of lesser educational achievement do worse in school?), and radically alters the implications. I expand on this in the section Conclusions for Social Policy.

Genetics and Heritability

I am astounded that few people distinguish between genetics and inheritance. To put it simply, you may inherit your parents’ silverware, but the mechanism is not genetic. The same can happen with intelligence. One may share a mental characteristic with one’s relatives without the mechanism being genetic. It is difficult to determine the extent to which such a characteristic is determined genetically as opposed to environmentally, and in many cases the question does not make any sense. The problem remains in the rare instances of identical twins reared apart, because “environment” starts at conception, a point at

which few twins are separated. Even that may not be soon enough, because it is possible that egg or spermatozoon had been damaged in some as yet unknown manner. Current behavior, even on a highly g-loaded ability test, is a function of genetics, environment, and their interaction. Current estimates of the heritability of intelligence (the amount of variance in IQ due supposedly to genetic factors, largely derived from identical twin studies) are contaminated, and undoubtedly inflated, by two factors: the shared early environment (even if only prenatal and perinatal) and the fact that adopted children are not randomly assigned to environments. Furthermore, any estimate of heritability is limited to the context in which the estimate was obtained; if you change the environment, for instance by making radical changes to children's early environments, the estimates may no longer be valid. I accept *The Bell Curve's* estimate of .6 to .8 for the heritability of intelligence if these limitations are understood, but I do not see that this estimate constrains what *might* happen in the future. Heritability may be more a result of the way things are than a cause of it.

Racial and Ethnic Differences

It is not at all clear to me why Herrnstein and Murray spend so much time and effort presenting their analyses of racial differences in IQ and social behavior. Presumably in a democracy, especially one with a Bill of Rights (even one whose signatories included slave-owners), one is not going to do anything as a consequence of racial differences other than attempt to attenuate their worse effects. Herrnstein and Murray often make the point that individuals should be treated on their own merits, not as a function of their race. So why do they devote so much space to racial differences? I fear that there is a considerable market for such information, and that even though the purveyors of the information insist that it should not be used as the basis for decisions, it will be.

I believe that there are good scientific reasons for discounting racial and ethnic group differences beyond any moral reasons that may be offered. First, race is not a very satisfactory biological variable. Those who study race as a variable usually employ it as a measure of some innate difference. Yet it is not clear how race is determined or how it is thought to act as a biological variable. If you have 15 "white" ancestors and one "black," but have a dark skin color, you are more likely to be treated as "black" than someone who has 15 "black" ancestors and one "white" but has a lighter skin color. I presume that it is not skin color per se that is thought to influence cognitive abilities, but rather a complex of genes that are argued to be associated with it. It seems unlikely that the gene or genes responsible for skin color are also responsible for mental ability, so the effect (if there is one) must be due to genes that are merely associated (i.e., correlated) with them. Given the amount of mixing that has taken place over the centuries, particularly in the US, it seems unlikely that many gene associations would remain distinct; in any case, there is no necessity for them to remain distinct in the future. Perhaps race should be seen more as a self-report variable like self-concept; instead of a pure biological, causal factor, it is more the consequence or accretion of an array of causal factors that are still poorly understood. Herrnstein and Murray acknowledge that they employ race in this way, as one's self-classification (p. 271), but then go on to "comment on cognitive differences among races as they might derive from genetic dif-

ferences" (p. 272). Although they admit at the outset that there are "more questions than answers" (p. 272), one wonders if their readers keep this qualification in mind as they read the book.

Second, like most self-report variables, race is not very useful in causal analyses, as you cannot randomly assign subjects to different levels of it. No matter how sophisticated the statistical analysis, race is something the subjects come in the door with. The more you believe in racial differences, the less you should be able to believe, for instance, that the same SES score means the same thing for members of different races.

Third is the notion of bias. Herrnstein and Murray do a good job of discussing the evidence on various forms of bias in mental testing. They concur with the literature (Jensen, 1980) that the commonly used mental tests are not biased either at the item level or in terms of what they predict for blacks and whites in the US. They admit that there is a form of the bias hypothesis that is not directly subject to empirical investigation: "the tests may be biased against disadvantaged groups, but the traces of bias are invisible because the bias permeates all areas of the group's performance" (p. 285). Herrnstein and Murray term this the "background radiation" effect and discount it, but I find it quite plausible. Their argument against it is based on the finding that blacks do *not* do worse than whites on some measures; these measures (Forward Digit Span) are not related strongly to the core construct of intelligence employed in *The Bell Curve*, so I do not see this as a great difficulty.

For these reasons, I choose to ignore *The Bell Curve's* Chapters 13-16 on racial and ethnic differences.

The Bell Curve's Data Analyses

The core of *The Bell Curve* is in Chapters 5-12, which present the effects of intelligence ("educational achievement," as I argue above) on a variety of social behaviors. The basic question addressed is: What effect does intelligence have on behavior after controlling for socioeconomic status (SES)? Regression analysis is used throughout, and a reasonable amount of detail is provided in Appendix 4. The results indicate that intelligence (as measured in the NLSY) is more strongly associated (negatively) with a range of social problem behaviors than is SES (again, as measured in the NLSY).

Multiple regression is a powerful and sophisticated technique, but no statistical technique is any better than the data fed into it. As techniques become more sophisticated, the nature of the assumptions on which they rest and the quality of the reasoning process become more obscure, especially to the lay reader. The regression analyses in *The Bell Curve* suffer from three classic limitations.

First, statistically significant results do not necessarily mean practically important results. Herrnstein and Murray themselves admit that many of their results are weak, intelligence accounting for less than 20% (and often much less) of the variance in behavior. I fear that many readers will miss this point. Such results may be important for theory, but offer little to practice.

Second, the constructs of interest may be poorly measured by the actual variables. I argue above that *The Bell Curve's* intelligence measure might be better termed educational achievement. Their SES measure is probably typical of the literature, being the average of total net family income, mother's educa-

tion, father's education, and an index of occupational status (p. 574), but one can question whether these measures truly tap what is meant by "environmental effects." It seems obvious that the quality of the home life, especially as it relates to cognitive behavior, is most likely to be the causal agent and that it is at best poorly measured by the SES index. Thus their SES measure may only address a small proportion of environmental effects.

Third, a significant regression effect between Predictor A and Outcome B can give the impression that A is a cause of B. Regression analysis makes use of correlations, and all the cautions appropriate to correlational analyses need to be applied to regression analyses, especially "Correlation does not imply causation." When predictors such as *The Bell Curve's* IQ measure are employed, one must be quite suspicious whether they are predicting successfully because they are associated with other variables that are actually the causal agents. For example, educational achievement in late adolescence may be the complex result of early environment, language stimulation, and education above and beyond genetic effects. A significant regression effect could be the result of these factors rather than "raw talent," and would not be attenuated by the SES variable that does not measure such things. In technical terms, one wonders if the regression models are underspecified, that is, whether they contain the "right" predictors.

Fourth, regression results, like any others, apply only to the context in which they were derived. This seems particularly relevant when the constructs and variables are laden with social import and when many of them (e.g., being in "poverty") are a function of laws and social policies. To illustrate: if the poverty line is raised or lowered, the number of poor people is altered, when in fact no one's income has changed. A given level of income may have very different consequences depending on where one lives and the generosity of friends and family. To be more extreme, if every citizen received a guaranteed annual income that was above the poverty line, none would be poor at all. The results shown in *The Bell Curve* are for the US, and are therefore dependent on their specific history. One of the disappointments of *The Bell Curve* is that the authors did not regard other countries as "experiments" that could shed light on American problems (it is also possible that there is a lack of data). One can wonder what effect a history of racism, violence, militarism, robber baron capitalism, and crime-linked drug abuse has on the relationships among intelligence, SES, and social behavior, but one cannot do regression analyses on the NLSY data to find out.

Implications for Social Policy

In the final section of the book we are told that attempts to raise intelligence have failed, that American education is doing a better job with the less able than with the more able, and that affirmative action is a cancer destroying American institutions. Herrnstein and Murray have some suggestions: restore many social functions to the neighborhood, simplify the rules by which society operates, reorient education, modify affirmative action policies, discourage low-income/ability women from having children, and modify policies so that immigration is based more on competence and less on humanitarian or family criteria (these are presented in Chapters 17-22).

In general the recommendations conform to the current right-wing American agenda, aiming to eliminate federal government involvement, regulation, and social welfare programs without much thought to why they were initiated. They do not strike me as profound or insightful. More disturbingly, they concentrate on the symptoms of problems rather than their causes. Many of the recommendations are only loosely related to the extensive analyses that precede them.

I focus on two recommendations having particular salience for educators, the removal of legal rights to support from unwed mothers and their children, and the shift of resources from disadvantaged to gifted programs. Herrnstein and Murray's obsession with marriage typifies their focus on symptoms, not causes. Like many commentators in the US at the moment, they seem convinced that unwed mothers are luxuriating on welfare and are motivated to have children by the promise of welfare support. Their argument is not supported with much evidence, ignores much relevant thinking, and lacks plausibility. Has anyone ever surveyed unwed mothers to find out why they have children? This seems like an important first step. My guess is that the reasons are quite varied, ranging from the middle-class woman with adequate resources who decides she wants a baby but not a husband, to other women, probably much younger, who desperately need to be loved, lack the self-esteem to say no, lack knowledge about birth control or lack the mental ability to use that knowledge, and have no access to abortion. There seem to be many ways of tackling these myriad factors instead of removing social support. Removing that support seems to me to guarantee that even more children will be raised in poverty by the least adequate mothers with less and less assistance. If there is a cognitive underclass, surely this is its breeding ground. Furthermore, the identical treatment of all unwed mothers and their children begs the question of what the causal factors are. I can only assume that Herrnstein and Murray do not think that having a marriage license tucked away upstairs will prevent poor parenting or that having a violent and abusive spouse in the home is preferable to none at all. My point is that poor parenting is the problem, not the absence of marriage ceremonies. Let's find out what the causes of the problem are and eliminate them.

The recommendation that resources be shifted from disadvantaged to gifted programs is based on two arguments: that efforts to raise cognitive ability have failed (Chapter 17), and that American education has been "dumbed down," that is, made easy so that the less able can pass (Chapter 18). Even if these arguments were true, shifting resources to gifted programs would not follow. First, many of the programs (e.g., Head Start) reviewed in *The Bell Curve* either were not designed to raise intelligence, or should not have been, but rather aimed to increase achievement either in school or the world (see Zigler's comments in Azar, 1995). Second, that particular programs have failed does not imply that the task is impossible, just that we have not yet found out how to do it. It seems plausible that the key to raising intelligence is the quality of parent-child interaction in the early years, a factor requiring parent education in addition to special child education. Until all such factors have been addressed in interventions, we should not conclude it cannot be done. We may then conclude that we cannot afford it, but that is a different issue. Third, even

if American education has been pitched toward the lower end of the ability spectrum, there is little evidence that it has been very successful—in fact much of *The Bell Curve* can be seen as an indictment of that lack of success. Should the goal of raising performance of low and middle achievers be abandoned because it has not been done well? Fourth, much of *The Bell Curve* seems to argue that the cognitive elite are getting more and more, both in terms of education and employment; in what sense has education failed these individuals? Perhaps the point is that we *could* have more such individuals, but *The Bell Curve* argues that virtually all of the cognitive elite can already be located in the elite professions or at the upper levels of business (p. 60); there seems to be a contradiction here. Fifth, why must programs for the gifted come at the expense of programs for the less able?

Conclusions

Although I suggest that there are many weaknesses in *The Bell Curve's* arguments, there is merit in some of the issues raised and in some of the conclusions reached. Canada does have something to learn here, though not always what *The Bell Curve* would intend. I confine my conclusions to two areas, the importance of education and the effects of the American context on the analyses presented, and then make final comments about politics and intelligence.

Education. Contrary to *The Bell Curve*, my reading of their analyses only strengthens my belief that education is important for all, not only those at the top. The main dependent variable that they analyze, termed by them intelligence, can be argued to represent instead educational achievement. No doubt intelligence affects educational achievement. Even if intelligence controls 99% of the variability in achievement and is .99 heritable due to genetic factors, the purpose of education is to address whatever is left over. As many have argued, it makes more sense to address what we can change rather than what we cannot. To use an argument used elsewhere in *The Bell Curve*, very small effects, even .1 SD per generation, will accumulate and compound in time. If society is changing and lower-skill positions are being eliminated, education in the form of skill training will be more and more important. Even if there are not enough jobs to go around, it will still be important to have a literate and informed populace. Literacy is within the reach of all but the least able, but we are not yet close to that level of success. And we should not give up on attempts to understand how intelligence develops and whether it can be nurtured more successfully. Regardless of how the Americans decide to change their education system, we should devote ourselves to maintaining and strengthening Canadian education systems.

This does not mean that all *The Bell Curve's* contentions and proposals regarding education are wrong. It is worthwhile to consider whether literacy and numeracy standards are sufficiently high, whether the most able students are adequately supported and challenged, and whether parents should have more control over what school their children attend. But these proposals are already part of the public debate and are being acted on in various provinces. *The Bell Curve's* contribution is to emphasize the importance of intelligence, both as raw talent nurtured by schools and homes, and as the outcome educational achievement, which their data suggest is important in preventing a host of social ills.

Social context. We must remember the context in which *The Bell Curve's* data and results exist. Would the same results occur in a society where there was less absolute poverty, where the poor were treated with greater dignity and had better access to health and other services, where there was less violence, fewer guns, less of a necessary link between drug usage and crime, more access to birth control and abortion? We do not know, and *The Bell Curve* cannot tell us. At the very least it seems reasonable to attempt to maximize the quality of the social context, to minimize the deleterious effect that many variables could have. There is simply no evidence that *decreasing* the quality of the social context will have any benefit, except perhaps for those whose taxes will go down, and then only in the short term.

Politics. It would be hard to conclude without touching on the politics that lurk just below the surface of the debates triggered by *The Bell Curve*. *The Bell Curve* is science addressing social issues, and that is good. But to what extent is it relatively dispassionate scientists examining the data and reaching conclusions that just happen to fit a particular political model, rather than being individuals of a particular political persuasion searching for data, results, and arguments that match their politics? As I suggest, *The Bell Curve* is consistent with the right-wing agenda in the US these days, and it has evoked the predictable left-wing objections (Jacoby & Glauber, 1995). There is a tendency toward defending one's "wing," regardless of the merits of its case. This is a sure recipe for false dichotomies and sterile debates to which education is no stranger. If truth lies between these extremes, we will have to listen to the arguments of both sides and judge each point on its merits. To believe in intelligence is not necessarily to accept strong genetic arguments, and to believe in education is not necessarily to oppose scientific enquiry. None of us is unbiased on these issues, but that does not mean that we cannot consider each argument and proposal fairly and intelligently.

Intelligence. In the end, what relevance does intelligence have for social policy? Seen as educational achievement, *The Bell Curve's* evidence is that it is quite important, given the many limitations discussed above. Greater achievement could well reduce many of the social problems that plague our society, though we cannot be certain of that from *The Bell Curve's* analyses. *The Bell Curve's* data do not address intelligence as raw talent (i.e., the cognitive ability with which children enter school), but it is reasonable given much other research to assume that raw talent is one of the major contributors to educational achievement. If we wish to increase raw talent, there is really no option in a democracy to improving the quality of early environment and education, regardless of the degree to which raw talent is a function of genetics or early environment.

Acknowledgments

Much of this article was planned while I was on sabbatical at the Universities of Newcastle and Western Sydney in Australia. I thank those who discussed *The Bell Curve* with me, especially Robert Cantwell, Trevor Cairney, Philip Moore, and Neville Schofield. I also thank Robert Wilson for commenting on a draft of this article and for our continuing discussions of regression analysis.

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For Whom *The Bell Curve* Toils

Intellectuals and Monuments

It is evident to even the most casual student of past civilizations that the ruling classes typically have had considerable material and intellectual resources devoted to the construction of monuments promoting their own superiority over the ordinary folk. Our own times may seem to us to be more complicated, both in terms of the relations between groups with economic or political power and diverse intellectuals, and in terms of the artifacts we could leave behind. For most contemporary intellectuals most of the time, the relationship between their particular work and the interests of any supposed ruling class remains quite obscure. But even in advanced industrial market societies such relations have become more evident in times of social crisis when the old social contract needs to be reconstructed.

As adept biographers have documented since the mid-1800s, the private mindsets of corporate elites have quite consistently presumed the inherent superiority both of their own capabilities and of market dynamics over government intervention. But in modern liberal democracies, elites have frequently reconciled themselves to more progressive institutional forms negotiated with the lower classes. When the old social order breaks down, both new economic deals and alternative political ideologies are needed to build a new one. It is in these historical moments that the alignments between intellectuals' knowledge and social groups' powers is at its most apparent. Invariably in such social crises, arguments in favor of the inherent superiority of a ruling group in terms of some discernible feature have been promoted by affiliated intellectuals. The bell curve, or "normal" distribution of IQ test scores, has been used for generations to legitimize the grading and selection of students. It may ultimately be found to be one of the key justifying artifacts of hierarchically organized industrial capitalist societies. Herrnstein and Murray's *The Bell Curve* is more likely to be remembered as an early right-wing, corporate-sponsored bluff in the current renegotiation of our social order. The extraordinary attention given to this book is probably more closely related to the resonance of its arguments with the private world views and neoconservative political agendas of the corporate controllers of the mass media than with any scholarly merits of the book itself.

In a democratic society anyone has the right to argue for any viewpoint. But it is only fair to expect advocates to identify what vantage point they are arguing from, as well as what they are arguing for. In a class society, totally independent critical inquiry is an illusion. The best we can hope for in social

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research is frank declaration of interpretive vantage points and political alignments, the conduct of replicable empirical studies, and the honest presentation of findings and conclusions. Charles Murray is a Bradley fellow, as noted on the dustjacket of this book. The Bradley Foundation is one of largest sponsors of conservative intellectual work in the United States. He and Herrnstein (Herrnstein & Murray, 1994) fail to note that most of the research on which the central claims of *The Bell Curve* are based—including that of Arthur Jensen, William Shockley, Philippe Rushton, Richard Lynn, and Thomas Bouchard—has been underwritten by the Pioneer Fund, a small endowment fund established by a Massachusetts textile heir to advocate hereditarianism (Lane, 1995). Herrnstein and Murray are advocates for hereditarianism masquerading as independent scientific researchers. By the same token, most of their many critics to date also pose as independent intellectuals while advocating environmentalist perspectives and implicitly aligning themselves with existing liberal institutions. This particular commentary comes from a professor at a public university whose research on issues of social inequality has been funded by government-sponsored agencies through peer-reviewed competitions. My political sympathies are definitely with subordinated groups, particularly lower class people. I have no fixed position on the nature-nurture debate, but remain skeptical of arguments based on either the inherent superiority of designated groups—such as that of Herrnstein and Murray—or the presumed adequacy of established institutional forms—such as some of the counterarguments of their legion of critics (Lane, 1995).

IQ Scores and Jump Shots

Herrnstein and Murray conveniently lay out most of their underlying assumptions/conclusions early in the book (pp. 22-23) prior to launching into their linear regression-based ransacking of the National Longitudinal Survey of Youth. In a nutshell, there is a general factor of cognitive ability; it is most accurately measured by IQ tests; IQ scores match what people mean by “smart” in ordinary language; IQ scores are stable through life and unbiased; and cognitive ability is substantially heritable. The final key assumption stated later is, of course, that the dominant economic class is increasingly constituted by the most intelligent people.

The entire argument, therefore, hinges on the adequacy of IQ tests as a summary measure of intelligence. I have personally distrusted IQ test results ever since my first term in high school. I took an IQ test that seemed so offensive in its standardized multiple choices that I was provoked to spend about half an hour writing an angry critical essay, which I duly enclosed and for which I received zero IQ points. One of my core academic teachers, who was a true believer in the validity of IQ as a measure of intelligence, soon labeled me as an “overachiever” who didn’t have the real talent of some of my “gifted” classmates. I confirmed this assessment from an unimpeachable source, a new girlfriend who went to another school but whose sister was a teacher at mine and who witnessed these characterizations in staff meetings around student awards decisions. After experiencing the consequences of this labelling for a few months, I declared my criticisms of the test and this teacher to the school principal. My academic image seemed to improve almost immediately. As a white, middle-class boy with high self-esteem, I sensed that this

low intelligence label was both wrong and dangerous to my future. In fact, because I'd spent more time shooting jump shots than doing homework, I was much more proficient as a basketball player than a student at that point. A few years later, my dream of becoming a professional basketball player had been shattered, but I could score on any IQ test (Esterbrook, 1995).

More generally, the notion that our cognitive abilities can be reflected adequately in a single summary measure is extremely suspect. For example, the Harvard psychologist Howard Gardner has identified at least seven distinct intelligences, including linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, and intra- and interpersonal computational capacities. Herrnstein and Murray dismiss such views as "radical" because of an absence of statistical verification (p. 19). Even if these various intelligences tend to be modestly correlated, this does not warrant reducing them to a single number. It would be just as reasonable to treat measures of these abilities additively—but I doubt that my classmates would have been any more impressed by my "genius" if my points-per-game average had been added to my IQ score.

The basic problem with IQ tests, however, is their cultural bias. IQ tests have usually been designed by upper-middle-class experts, using middle-class linguistic codes and cultural knowledge content. These tests are administered by middle-class teachers mainly to aid in the selection of the middle-class workers of the next generation. There are systemic barriers to the effective performance by immigrant and lower-class kids on such tests, whatever their actual intelligence. If intelligence is assumed to be what these IQ tests measure, then lower-class kids will always be found on average to be less smart. In the most extreme case, to be illiterate is to be presumed stupid. But consider the comment of a rural Vermont illiterate worker:

It don't bother me. They can't buffalo or fool me on anything. As far as doing any kind of work, I can do any kind of work that anybody can. I'm far enough ahead on stuff, outside of reading, it's quite a job for anyone to trick me on anything. There ain't a piece of equipment yet that I can't run, or I can't tear down and put back together. (Cole, 1976, p. 66)

This appears to be one "smart" guy. Popular education programs with poor illiterate people around the globe have found that they can commonly become literate in extraordinarily short periods when working with sympathetic instructors and using curricular materials that reflect their own experience.¹ Using Herrnstein and Murray's criteria, these people would simply be written off.

IQ scores are far less immutable than Herrnstein and Murray assert. There have been average increases in IQ scores in some countries during the post-WWII period equal to the current 15-point difference between US blacks and whites. Poor black kids adopted into affluent white homes have shown substantial increases (Gould, 1995). Herrnstein and Murray do recognize an upward drift in IQ scores generally and also concede that the IQ gap between whites and blacks has narrowed by about three points in the past few decades, probably because of blacks' improved material circumstances. But they argue tautologically (Chapter 13 and Appendix 5) that this convergence is likely to cease because of higher fertility among lower-IQ blacks who are presumed to hand on lower IQs to their offspring. Whatever may happen in the future, such

historical changes reveal IQ tests to be socially constructed devices to measure normatively approved cultural knowledge rather than any inherent universal cognitive ability (for a revealing historical account, see Rose, 1979).

Perhaps the most extraordinary aspect of *both* hereditarian and environmentalist approaches to intelligence based on IQ scores is a general failure to conduct empirical studies that measure *parental* IQs. The most elementary test for the heritability of IQ score would be the intercorrelations of mother's and father's IQ scores with that of the child. *The Bell Curve* is filled with speculative calculations on the extent of heritability based on the assumption that it is somewhere between 40% and 80%. Although generally high correlations between the IQ scores of identical twins raised separately are suggestive of high heritability of some cognitive abilities, only parent-child IQ score correlations could address the question of heritability directly. But the perspective of parental genetic transmissions immediately raises mitigating conditions such as other factors besides intelligence in mating affinities, as well as random variation and regression toward the mean in the combination of parental traits. An even more profound limitation to this whole form of debate is the fact that advances in the neurosciences and molecular biology in recent decades have discovered complex interactions between brain development and environmental experience. So either to assign ballpark estimates to genetic factors as Herrnstein and Murray do, or to dismiss genetic transmission as many of their critics do, is to display one's ignorance of the existence of this feedback loop (Duster, 1995).

Cognitive Elites and Underemployment

Herrnstein and Murray profess great concern about the partitioning of the smart and the stupid, with the growth of a cognitive elite of high-IQ professions at the top and low-IQ unemployed and welfare cases at the bottom. Certainly the economic slump that began in the advanced industrial market economies around 1970 and the subsequent tax and services cuts by neoconservative regimes have led to class polarization, with the rich getting richer and the poor underclass burgeoning. But there is little evidence for the sort of partitioning on the basis of intelligence that these authors suppose. In fact most of their arguments about employment relations are vitiated by their admitted failure to cover "large macroeconomic forces" (p. 157). The long-term decline of agricultural self-employment and the post-WWII expansion of professional-managerial jobs, along with the "credentialism" associated with the massive expansion of postsecondary schooling, are contextual effects that go a long way to explain any increasing concentration of more highly educated people in professional jobs.

Even the simplest estimates of intergenerational reproduction of occupational classes indicate that Herrnstein and Murray's views on cognitive partitioning across classes are quite exaggerated. Table 1 presents recent estimates of occupational class reproduction for the Ontario male labor force based on a series of surveys that I conducted and using widely accepted Pineo-Porter measures. Although these surveys contain no direct measures of IQ, they do suggest two important points about class formation. First, the intergenerational reproduction of corporate executive or professional statuses is achieved by only a minority. Second, there is clearly intergenerational regression toward

Table 1
Intergenerational Reproduction of Occupational Class, Ontario Male
Labor Force, 1988-1994

Respondent's Class	Occupational Class Matches Father's				Column Total %
	Age Cohort				
	18-34 %	35-44 %	45-54 %	55+ %	
Corporate executive*	—	27	29	43	<1
Professional/High Manager	39	24	33	22	14
Semi-professional/Supervisor	35	20	19	26	24
Skilled/Semi-skilled	58	53	64	65	44
Unskilled	38	29	30	23	17
N	378	364	256	225	1,223

*Including professional/high manager designations on Pineo-Porter Scale.
Source: Livingstone, Hart, and Davie (1995).

the middle of the class structure from both the top and the bottom. No *direct* evidence is presented by Herrnstein and Murray to indicate that the reproduction of intelligence within classes is any more pronounced.

But even more damaging for this book's central thesis of an increasingly class-based distribution of intelligence is the existence of substantial and growing *underemployment* (Livingstone, in press). In spite of credential inflation, a large proportion of the work force now has more schooling than their jobs formally require. Many highly educated people can find no jobs at all; for example, over 30% of the users of food banks in Toronto last year had postsecondary education (unpublished survey, Daily Bread Food Bank, May, 1994). So, even if one accepts Herrnstein and Murray's assumptions linking advanced schooling and intelligence, the number of bright people clearly remains much greater than the jobs for which high intelligence is needed—quite the contrary to their assertions (p. 27).

Custodial Darwinism?

After over 500 pages of speculative arguments and analyses of this order, Herrnstein and Murray put forward their policy proposals. The central thrust is captured in two chilling sentences: "Cognitive partitioning will continue. It cannot be stopped, because the forces driving it cannot be stopped" (p. 551). In other words, those who make low scores on IQ tests should be content with menial positions in the future because it is inevitable that those with high IQs will rule the world. Although the cognitive elite rules, most folks will just get on with their lives as individuals in a "simplified" state where group differences are "insignificant." Such differences are insignificant, that is, unless one happens to be a recent immigrant or a black single welfare mother, in which case they are seen as more likely to be stupid and therefore subject to "social-engineering solutions" (pp. 549-550). Such solutions remain unspecified except for prior allusion to a custodial state with "high-tech Indian reservations" (p. 526) for stupid deviants. My own recent surveys have, rather, found visible minority immigrants to be more likely to be underemployed, with relatively

higher levels of schooling than white Canadians, whereas women generally are more underemployed than men (Livingstone et al., 1995). But never mind such aberrations. The essential law is superior survival for those with the fittest IQs, who just happen to be preponderant in the white upper middle class. Herrnstein and Murray serve up a bizarre combination of the crudest social Darwinism without even a simple explanatory mechanism (such as, e.g., random variation/selective survival of the more intelligent), coupled with a mini-totalitarian state for imputedly stupid survivors.

Perhaps their most strident recommendation is to put more effort into the education of the gifted. After much hand-wringing about efforts to improve the cognitive functioning of the disadvantaged, they conclude that such efforts have largely failed and more resources should now be devoted to a separate, enriched education for high-IQ kids via a voucher system (pp. 435-445, 550). The irony of this recommendation is that the cumulative weight of research now clearly indicates that mixed ability groupings generally benefit the cognitive performance of slower kids without impeding the intellectual progress of brighter ones. In addition, the social development of brighter kids is often enhanced (see, e.g., the review of relevant literature in Curtis, Livingstone, & Smaller, 1992). In spite of Herrnstein and Murray's allusions to generosity and civic mindedness, community, and human dignity, such findings contradict their essential law of competitive individualism. Hence they are ignored.

Lest this commentary be classed as yet another polemic against *The Bell Curve*, let me conclude by noting that I do agree with the authors on some points. We do need to recognize that there are genetic differences in intelligence—but they do not appear to be either as simple or as intractable as Herrnstein and Murray assert. I also agree that there is considerable overlap between blacks and whites, and among social classes, in cognitive ability, and that most people with lower IQs are “good people” (p. 385). But most importantly, I agree that—with the notable exception of my own—the smartest women are not necessarily the best mothers (p. 216).

We do not need more sheer intelligence. We are clearly wasting what we have through underemployment. What the world urgently needs now is more love and compassion across classes, races, sexes, and species. In spite of *The Bell Curve* authors' proclamations of their good intentions, such good cannot come from such an inherently mean-spirited book.

Note

1. The most famous examples are the conscientization projects in which Paulo Freire has been involved. For an impressive US case, see Eberle and Robinson (1980).

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Two Tails are Better than One: The Logic of *The Bell Curve*

With publication of *The Bell Curve* in 1994, Harvard psychologist Herrnstein was once again a controversial figure in the public's eye. Although other recent books had touched on similar issues (Itzkoff, 1994; Seligman, 1992), none had aroused both the ire and praise that Herrnstein evoked. Previous debates with Skinner in 1977 on inherited versus learned behaviors, with Chomsky in 1972 on IQ versus social stratification, and with almost everyone else regarding his matching law in 1961 had made him well known in the scientific community as well. His untimely death in the fall of 1994 left it to his co-author, political scientist Murray, to defend the book on television and radio talk shows (Gunter, 1995).

This article reviews some of the controversies in intelligence testing with particular reference to its impact on Canadian society during the last 100 years. Some of the recommendations made by *The Bell Curve* are compared with earlier proposals made during the eugenics movement at the beginning of the 20th century.

The issue of the role of intelligence and its relation to society is not a new topic for Herrnstein. It was in his now famous article in the *Atlantic Monthly* magazine (Herrnstein, 1971) that he first suggested that as society becomes more egalitarian and artificial social barriers to success are reduced, it inevitably drifts toward a hereditary meritocracy. His support of classical intelligence theory in search of *g* (i.e., a general factor in a hierarchical model of intelligence) is still hotly debated among psychometricians (Azar, 1995). Many other scientists challenge the view that IQ can be a reified construct and argue instead that IQ tests measure only a small sample of behaviors that are more related to social class and educational level than genetics (Gould, 1981; Kamin 1974). Now, in what can arguably be called his magnum opus, Herrnstein revisits the IQ controversy marshalling evidence from a variety of sources (note that the authors themselves did not conduct any of the studies cited) while largely drawing from data in the National Longitudinal Survey of Youth (NLSY) that has followed 12,000 American adolescents and young adults since 1979.

A recent critique of the sources of *The Bell Curve* casts doubt on its scientific credibility (Lane, 1994). Many of the authors cited for psychometric data have been associated with the anthropological journal *The Mankind Quarterly*, which has been a strong supporter of eugenics research and policies. Apparently five of the articles cited in *The Bell Curve* are taken directly from this journal, and 17

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of the researchers cited have contributed to it as well. Many of these researchers were also supported by the Pioneer Fund whose benefactors have been supporters of the Nazis. Although this tainted funding of scholars does not by itself invalidate their findings, it does mean that their data should be closely scrutinized. Studies cited that purport to show that Africans score 30 points below whites (which is even lower than American blacks) whereas Asians score 10 points above whites may be due either to test bias or sampling error (Lane, 1994). At this point there is no irrefutable evidence that sets clear biological limits on intelligence.

The nature-nurture debate is an old standard for scientists going back at least as far as the split between Plato and Aristotle in ancient Greece. It has been revived periodically such as in the case of the wild boy of Aveyron with Rousseau versus Itard (e.g., Lane, 1976) at the beginning of the 1800s, in the Terman-Lippmann debates (Block & Dworkin, 1976), and the case study of the Kallikak family by Goddard (Smith, 1985) at the turn of the 20th century. During the 1920s and 1930s the evidence appeared to tilt toward nature and then swung back toward nurture during the 1940s through the 1960s.

An article by Jensen (1969) in the *Harvard Educational Review* rekindled the debate by suggesting that there are real racial differences in intelligence (i.e., a one-standard-deviation difference between blacks and whites) and suggested that little could be done to compensate for these disparate abilities. His evidence was then attacked by many others (Kamin, 1974; Hearnshaw, 1979; Gould, 1981). Jensen continues to counterattack (Jensen, 1980, 1984, 1992) with dense psychometric data to support the nonbiased nature of IQ test scores, whereas opponents contend that genetic bases for intelligence are simplistic and biased and confuse correlation with cause (Lewontin, Rose, & Kamin, 1984; Kamin 1995; Lane, 1994). The nature camp suggests that as much as 80% of intelligence may be directly inherited, whereas the nurture camp is equally forceful in reducing this figure to about 20%. The debates are as often political and ideological as scientific and frequently resort to ad hominem arguments. The authors of *The Bell Curve* offer to split the difference and give an estimate of 60% heritability for intelligence while allowing 40% variation due to environmental factors. Although they admit that dramatic environmental changes could make a difference, they argue that "in reality, what most interventions accomplish is to move children from awful environments to ones that are merely below average" (p. 109). Therefore, the effects of most compensatory programs remain negligible.

Of course the implications of these debates will affect the government social programs in terms of helping both ends of the bell curve: the cognitive elite and the underclass. If the forces of nurture hold sway, then social welfare, affirmative action, and compensatory education are viable and essential components of a democratic society. However, if nature can explain most of the variability in achievement and social class, then government should withdraw help from the underclass and support the cognitive elite who will be the leaders of tomorrow's generation and the only hope for society as a whole. It should be noted that other educators feel that neither better genes nor improved schooling will produce major changes and suggest that true equality can only come about by social and economic changes (Bowles & Gintis, 1976; Jencks, 1972).

As a way of examining the social implications of these academic debates we can look at the eugenics programs that were popular at the end of the 19th century and the beginning of the 20th century. Eugenics tries to improve the human species by using principles of heredity. It includes both the negative eugenics of segregation, sterilization, and euthanasia as well as the positive eugenics of incentives for propagation of the elite (Kelves, 1985). Its goal is essentially selective breeding or what used to be called race betterment.

Although much has been written of the eugenics programs in Britain and the United States (Kelves, 1985), similar programs in Canada have just recently been brought to light (McLaren, 1990). Whereas the British had the problem of their elite migrating to other countries during the 19th century, North America had the problem of accepting multitudes of immigrants. Borrowing a term from population biology, eugenicists warned of dysgenesis, which refers to a downward pressure shift in ability distribution that brings about demographic changes strong enough to have social consequences (Herrnstein & Murray, 1994).

Although Canadian immigration policies usually favored people from other commonwealth countries, many other racial and ethnic groups emigrated to Canada. Europeans were downwardly ranked as either Nordic, Alpine, or Mediterranean. Immigrants were charged with filling up the facilities of asylums, prisons, hospitals, and other charitable institutions while reproducing rapidly. Politically inflammatory statements were made such as "Degenerates among people are worse than bad weeds to a farmer" as well as "Canada had become a dumping ground for the riffraff of the world" (McLaren, 1990, pp. 54, 59). The falling birth rate among Canadians was said to threaten the destiny of the Anglo-Saxon race, with the causes being variously touted as increased urbanism and neurasthenia (a common psychosomatic diagnosis in the 19th century similar to chronic fatigue). Suggestions for change included encouraging people to settle in rural areas, sterilization of the unfit, denying birth control to the fit, and restricting immigration (McLaren, 1990).

Eugenicists at the turn of the century in Canada warned of a direct correlation between the hordes of immigrants and increased insanity, criminality, and unemployment. There was concern not only about large immigrant families that reproduce "like the fish of the sea," but also that the native birth rate was dropping so somehow the newcomers were "sterilizing their hosts" (McLaren, 1990, p. 55). Using the argument that inherited traits were not malleable to a changed environment, eugenicists then attributed all societal ills to the immigrants. The first immigration act in Canada was passed in 1869 and was supposed to screen out lunatics and idiots. Actually, as doctors had no reliable screening methods, they often equated sanity and intelligence with competence in the Anglo-Saxon culture. The Immigration Act of 1910 added to this list in three broad categories:

The mentally defective included idiots, imbeciles, feeble-minded, epileptics, and insane; the diseased included those afflicted with any loathsome disease or a contagious or infectious disease that might become dangerous to the public health; and the physically defective included the dumb, blind, or otherwise handicapped. (McLaren, 1990, p. 56)

However, it was not possible to implement most of these restrictions due to the following reasons: (a) first-class cabin passengers were not subject to scrutiny; (b) railway and steamship lines were hostile to any operations that reduced their passenger lists; (c) there was not adequate time or staffing to make accurate diagnoses; and (d) the mass of immigrants were understandably not cooperative in providing accurate biographical information (McLaren, 1990).

After World War I Canadian eugenicists had new hope for policing immigration with the establishment of the Department of Health in 1919. Its intended mandate was to improve the efficiency of the population by eradicating feeble-mindedness, infant mortality, tuberculosis, and venereal disease. The waves of immigrants were likened to infectious diseases by calling them a social virus. The Canadian National Committee for Mental Hygiene was also formed in 1918 with the goal of reducing crime, prostitution, and unemployment. However, unlike the United States where mental testing of immigrants at Ellis Island screened out many potential immigrants (the rejection rate in the United States was 1 in 1,500 whereas in Canada it was only 1 in 10,000), physicians had no set standards to work by. In this atmosphere a culprit had to be found that could be more readily identified (McLaren, 1990).

Evidence of the superiority of nature over nurture was established through observations, such as the Army mental testing and the case study of the Dionne quintuplets. Many were convinced that intelligence was passed on mostly by heredity. Henry Goddard, a famous American psychologist, reported that about 50% of all immigrants tested at Ellis Island were feeble-minded (an early term for retardation) and so this classification soon became the source of societal problems (Smith, 1985). An early Canadian eugenicist, MacMurphy (1920), optimistically predicted that 80% of feeble-mindedness could be eliminated by segregation alone, but the ultimate weapon was to be sterilization of the unfit. The call for sterilization actually began in the 1890s due not only to the eugenics movements but also to the perfection of simple operations (vasectomy for men and tubal ligation for women) that were more socially acceptable than castration (Gould, 1985a). There were some cause and effect problems at the time, because some believed that feeble-mindedness caused venereal disease, whereas others believed that venereal disease caused feeble-mindedness. Threats to public health were therefore due to "individual inadequacy" in which feeble-mindedness was the single greatest obstruction to social reform. Case studies of the Kallikak and Jukes families were said to prove that social chaos resulted from reproduction of the unfit over several generations (Smith, 1985). However, the poor were also classified as degenerate and intelligence levels became associated with social class. It was comforting to the middle class that poverty and criminality were due to these individual weaknesses rather than a flaw in the economic structure of the country (McLaren, 1990).

Immigration slowed considerably from about 1914 to 1922 due to the war and a subsequent recession. However, there was much concern during World War I that dysgenesis was still occurring because the fittest men became soldiers and then were killed off while the degenerate were rejected for military service but allowed to breed at home. During the mid 1920s there was an

upsurge in the flow of immigration as the railroad companies sought immigrants to help settle the western prairies. By 1930 it had subsided again due to the depression years and did not pick up again until after World War II. The 1930s can be considered as the heyday of eugenics in Canada due to the scarcity of jobs. During this time sterilization laws were passed in Alberta in 1928 and in British Columbia in 1932 but were defeated in both Manitoba and Ontario, perhaps due to their larger Catholic population who opposed any form of birth control (McLaren, 1990).

Eugenics quickly fell out of favor when the full extent of the Nazi program of racial purification in concentration camps became known. Although strongly opposed by eugenicists, the Family Allowance bill was finally passed by the Canadian federal government in 1945 due to the surplus of jobs available, pressure from Quebec, and the efforts of the welfare-minded in social intervention. Yet the western sterilization laws were not repealed until 1972 (McLaren, 1990). Even today there is a controversy in Canada whether the developmentally disabled should be eligible for major surgery such as organ transplants.

Returning to the logic of *The Bell Curve*, the authors recognize that any attempt on the part of the government to institute negative eugenics policies would make most people apprehensive. Instead they emphasize the government's responsibility to end programs that encourage the underclass. They make their point clearly in one italicized section as follows: "If the United States did as much to encourage high-IQ women to have babies as it now does to encourage low-IQ women, it would rightly be described as engaging in aggressive manipulation of fertility" (p. 548). Besides not subsidizing births the authors advocate that birth control techniques be made increasingly available to women who cannot afford to raise more children. Surprisingly, the whole question of whether underclass women should seek abortions is omitted. Neither are there suggestions on how to encourage the elite to be more fertile. Many social policy suggestions sound like right-wing agenda such as reducing centralized government, more emphasis on the family, tougher punishments on crime, stricter immigration laws, earned income tax credits, and less credentialing of blue-collar jobs.

If none of these government actions is taken seriously, then a scenario is envisioned where the cognitive elite teams up with the already affluent (a total of 5% of the population but which represent 15% of the voting public) and pass laws that keep the underclass in a perpetual welfare state. In this science-fiction society the vices of crime, addiction, and family abuse will be rampant, which will then force the state to take over child care through large orphanages. The homeless will be placed in institutions. New prisons will be built and the police will abuse their new power. Surveillance and control procedures will require national identification cards for all. The underclass will increase in size and be relegated to the inner cities. Racial tensions will be more virulent and may reach a breaking point. Fear of crime may force a totalitarian custodial state, not unlike our current reservations for Native Americans, for the underclass, which would be actively supported by an elite class. In this scenario, both the cognitive elite and the affluent would become increasingly isolated from the underclass while also growing in political and economic power so that they

could bypass most social institutions in favor of private services. Rhetorically, they ask, what will allow these disparate groups to live in harmony? The answer comes in the last chapter entitled "A Place or Everyone." In this new world order, Herrnstein and Murray envision a society where low-IQ people are not pushed to excel but are simply valued for their more menial contributions in an old-fashioned neighborhood where social stratification is expected. Help for the underclass would come through volunteer charities instead of government bureaucracies.

The premise of *The Bell Curve* is that the negative repercussions of the above are due to the ideology of equality. Attempts to equalize humans will lead to inhumane tyrannies that promote diffuse moral outlooks worse than socialism or communism. Public figures are reduced to broaching controversial topics only under the guise of political correctness. The government mentality becomes one of "everything not forbidden is compulsory" (p. 533), so that the moral stance of equality, taken to its extreme, means that it has become unfashionable to talk about any differences between human groups, whether they be black versus white, men versus women, heterosexuals versus homosexuals, young versus old, or high- versus low-IQ groups. Such is the practice of affirmative action that changed from not allowing racial discrimination to requiring equal or equivalent outcomes of racial groups. Many people no longer see the distinction between not interfering and treating everyone the same. And all these views are seen by *The Bell Curve* authors as traditional American values supported by the constitution and the founding fathers. So whether a Malthusian laissez-faire economy and Spencer's survival of the fittest doctrines should prevail at any time in the future may depend on the Zeitgeist that includes the political, economic, and scientific climate of the times.

For Canadians these social implications may sound like an extreme case of the new social order gone amuck. For scientists it must be uncomfortable to view such extrapolations using their own evidence as a wedge. Here the two tails of the bell curve dictate the fate of the rest of the earth. This scenario has, of course, been recently explored in other disciplines such as economics (Reich, 1992). Both positive and negative eugenics have had a recent upsurge in Asian countries such as Singapore, which uses eugenically appropriate computer dating and allows educated women to have more children and gives them priority for enrolling them in the best schools (Gould, 1985b). However, if there is one concept that should have been learned from Darwin it is that the path of evolution—for species, cultures, or governments—is difficult if not impossible to predict. The rules of chaos theory may be more applicable here than classical psychometrics.

So *The Bell Curve* may be neither good science nor good politics. Both tails on the curve appear to be influenced by inaccurate testing and sampling. To suggest that to ignore the eugenics claims is to increase the disparities between these extremes in IQ and thus cause social upheaval may be a misrepresentation of the facts. The middle of the curve will need to remain the dominant force in both numbers and power in a truly democratic society. However, history shows that often scientific achievements are taken out of the hands of scientists when they have political implications (e.g., the Manhattan Project

during World War II to develop a nuclear technology). The track record of the cognitive and economic plutocracies in taking a benevolent dictator role in serving the underclass is not good (e.g., Machiavelli). In this sense *The Bell Curve* seems more of a throwback to the turn-of-the-century eugenics movement rather than a peek at the next century. The skirmish that Canadians had with eugenicists and their social policy recommendations in the 1920s and 1930s should make them wary of using any one criterion for social mobility. The two new tails of the bell curve may now be the scientists against the politicians.

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IQ Testing in America: A Victim of its Own Success

A major thesis of *The Bell Curve* (Herrnstein & Murray, 1994) is that intellectual capacity is concentrated into social classes. According to Herrnstein and Murray, this was not always the case. At an earlier point in United States history, few specialized occupations required intellectual competence. Class structure was based on wealth, with intelligence being evenly distributed among the classes. As the US changed toward a "high tech," knowledge-based economy, it became important to identify individuals with superior cognitive ability. The authors of *The Bell Curve* make it clear that mass education and IQ testing were the solutions to US economic requirements.

In this regard we note that mass education ensured that most people went to school regardless of background. That is, mass education fitted well with the US principle of equal opportunity. Ironically, once the masses were going to school, the focus changed from educating all students to identifying and selecting the bright ones through intelligence testing (so much for equal opportunity).

A point not mentioned in *The Bell Curve* is that IQ tests were originally used to monitor and assess the effectiveness of the educational system (for a review of educational testing, including IQ, see Haney, 1984). That is, early educators hoped to develop curriculum and programs that suited the learning needs of students regardless of social background. What has emerged, however, is an educational system directed at performance on IQ tests (e.g., scholastic aptitude tests). The development of effective educational programs has become secondary. In the present system the bright students are able to flourish while other students fall by the wayside (so much for mass education).

From our perspective, IQ testing has contributed to the low involvement of US parents in the formal education of their children.¹ A score on an IQ test is often taken as a measure of a child's innate cognitive ability. This assumption implies that parents can do little to enhance their children's academic performance. Parents in the US tend to set standards of performance to meet their child's IQ level rather than to encourage effort to overcome learning difficul-

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ties. In other words, IQ scores result in a self-fulfilling prophecy: parents (and teachers) believe their children cannot learn beyond a certain point and children meet these expectations.

As Herrnstein and Murray document, and we concur, the overall result of US IQ testing has been the rise of a class structure based on intelligence, with dull people on the bottom and the cognitive elite on the top. Based on the IQ-selection process, bright people have become concentrated in prestigious, knowledge-based occupations that yield high income and wealth. Conversely, the intellectually dull have been relegated to low-prestige jobs outside the information economy. Today many of these people are often unemployed.

Herrnstein and Murray also argue that the dull underclass is contributing to most of the US's woes. At least half their book concerns the correlation between IQ and a wide range of apparently intractable social problems. They describe the correlation between a high incidence of the social problem and the low intelligence of those who perpetuate it. This correlation is shown to hold for school dropouts, unemployment, crime, out-of-wedlock births, poor parenting, and many other social ills. We show that the relationship between IQ and social problems has been manufactured and is amenable to change through reform of US education.

The authors of *The Bell Curve* argue that many of us (mostly liberals) refuse to acknowledge the relationship between intelligence and social problems. However, according to the authors, the nation can only address its problems if it first faces up to the undeniable news. Americans must accept immutable differences in intelligence by groups of people, as well as similar differences among individuals in any group. Because differences in intelligence are unalterable, there is no point in special Head Start programs for underprivileged youth. Herrnstein and Murray conclude that the IQ gains of such programs are seldom realized and never maintained. Also, programs such as affirmative action are unjust and contribute to inefficiencies on the job and lower productivity in industry. Although the authors competently outline the problems that have resulted from intelligence testing, they offer no solutions. They merely conclude that solutions might be found if Americans had the courage to talk about these issues in public. Our position is that Americans would do better to discuss and set new educational objectives than to dwell on the IQ controversy.

Manufacturing Social Problems: IQ testing and Selection

As mentioned above, in chapter after chapter Herrnstein and Murray document the correlations between IQ and social ills. Interestingly, according to them, these correlations did not exist in the US before IQ testing was used as a means of concentrating individuals into social classes (see, e.g., the 1960s rise of crime, p. 236). In other words, a hidden message in *The Bell Curve* is that the IQ-selection process has resulted in engineered correlations between IQ scores and diverse social problems. For example, the selection of students based on IQ scores by elite US universities ensures that only a small percentage of people can rise to the top. Individuals who have average scores must attend less prestigious universities or go to city colleges. Those who score low on IQ tests either drop out of high school or merely complete their high school education. Consequently, they are assigned to the unskilled sector of the labor force. Thus the correlations among IQ and social problems such as unemployment or

poverty (and other associated social ills) are manufactured by the IQ-selection process.²

We agree with Herrnstein and Murray that US society indeed has been transformed to its detriment by concentrating people with similar IQ levels into distinct social classes. The authors, however, assume a status quo stance on the significance of IQ testing for US education. At no time do Herrnstein and Murray consider the possibilities of eliminating or reducing the use of IQ tests to determine achievement. Analysis of the system, however, immediately suggests that the source of US woes lies with an educational institution that accepts and propagates intelligence testing. From our perspective, then, the US's problems lie in a culture that emphasizes innate abilities and deemphasizes achievement through learning.

In addition to emphasizing the manufactured correlations between IQ and social problems, Herrnstein and Murray repeatedly show that socioeconomic status (SES) has little effect. Liberal thinkers may find it surprising that the correlations between IQ and social problems are not substantially reduced by taking SES of parents into account. That is, the kind of home background (well off or impoverished) does not predict well the incidence of various social problems. The authors of *The Bell Curve* would have us believe that SES has weak effects because IQ and social problems are inherently linked. Herrnstein and Murray do not consider the possibility that all correlations among IQ, SES, and social problems are engineered. That is, it is quite possible that the US system of IQ testing and selection of the smart (rejection of the dull) has reduced the impact of social background on indicators of Americans' way of life. In fact, one of the goals of educators and IQ testers was to allow gifted children to rise to the top independent of their social position. As with the correlations between IQ and social problems, the weak association between social background and social ills has been contrived by the education and testing systems.

The important point of our analysis is that there is no immutable relationship between IQ and the US's social problems. If correlations have been manufactured by a social system, it is possible to use social planning to ameliorate these relationships. One obvious step is to eliminate or reduce the impact of IQ testing as a primary basis for selection into higher education. This involves taking into account the diverse talents, skills, and motivations of individuals in the educational assessment and selection process. Another step is to modify US values and practices toward a culture of learning, where most people are expected to succeed in academic subjects, rather than only the gifted few.

America's Shame: Testing versus Learning

Equal opportunity for achievement is ingrained as a fundamental part of the US's values. The concept of equal opportunity means that individuals are presumed to have similar chances of achievement and success. Individual decisions based on skills, motivation, and performance allow one person to advance while others fall behind. For example, the entrepreneur who identifies business opportunities, arranges for investment of capital, and works hard to achieve her or his goal, is expected to succeed. Other persons who could also

pursue business ventures but do not seize the opportunity, take the risk, or put out the effort are expected to have less success.

Equal opportunity presupposes a meritocracy where each person competes and advances on the basis of performance. Unfortunately, IQ testing and selection has limited the competition for success to a single indicator of worth; merit is not assessed by actual performance, but assigned on the assumption that IQ scores measure the inherent general intelligence of people (the so-called *g* factor). All other facets of personality, motivation, and skills are underplayed. With Herrnstein and Murray's view that IQ scores are immutable and transmitted at birth from generation to generation, the majority of Americans continue to be excluded from the competition for prestige positions.

In order for the US to become a true meritocracy, a majority of people must be equipped with the skills, knowledge, and motivation to succeed in life. Such a change requires a shift in education away from testing for individual differences, toward a system of learning and performance. At the most basic level there would be a change from measuring reasoning capacity to an acceptance that reasoning is a skill that can be acquired by the majority of students.

The idea that reasoning is an acquired skill, rather than an immutable attribute, is illustrated by the cross-national comparisons of mathematics achievement by Stevenson and his colleagues.³ There is little doubt that learning mathematics equips people with abstract analytical skills and at the same time allows them to solve many practical problems. Also, the information, high-tech world economy demands the skills of mathematics and analytical reasoning. Thus an American society based on equal opportunity and merit would do well to endow its citizens with mathematical expertise. Surprisingly, mathematical achievement in the US is substantially below the performance levels of Asian countries.

An important consideration, given Herrnstein and Murray's emphasis on IQ and achievement, is the finding that children's cognitive ability does not differ among China, Japan, and the US.⁴ That is, the results indicate that the high mathematical achievement of the Chinese and Japanese students is not due to their greater intellectual capacities. The differences in achievement are, however, related to cultural practices in the areas of education and learning. For example, in terms of classroom management and organization in the US, Stigler et al. (1987) report:

American children fail to receive sufficient instruction. They spend less time each year in school, less time each day in classes, less time in the school day in mathematics classes, and less time in each class receiving instruction. The classes were organized so that American children were frequently left to work alone at their seats on material in mathematics that they apparently did not understand well, they engaged in many irrelevant activities, and they spent large amounts of time in transition from one activity to another. (p. 1285)

These classroom difficulties must be understood in a broader cultural context. In contrast with Americans, Asian cultures emphasize effort as the basis of individual achievement and minimize the importance of intellectual capacity. This concern with effort and achievement means that Chinese and Japanese children are expected to work hard to learn academic subjects and that teachers and parents are expected to set high standards for performance. Based on these

beliefs, Asian children spend substantially more time in school on mathematics and have greater homework assignments than US students. Students and teachers “are more intensely involved in mathematics than are their American counterparts. Chinese and Japanese teachers appear to be better prepared for teaching mathematics and endow their classes with liveliness and variety that typically are missing in American elementary school classes in mathematics” (Stigler et al., 1987, p. 1284). In addition, Asian children are expected to strive to learn the subject matter and to overcome academic problems by spending more time on difficult material. In Asian cultures parents are expected to arrange a study space for their children, supply additional educational materials as needed, and spend time with their children on academic problems.

The point is that people, regardless of IQ differences, show high achievement in mathematics when a culture emphasizes effort and learning rather than immutable cognitive ability. An obvious solution to Herrnstein and Murray’s intelligence and social class thesis (and the associated social problems) is for the US to adopt values and practices that mirror those countries with high mathematical achievement. In order to accomplish this, there would have to be a standardized curriculum in core subjects throughout the US. This would eliminate local variation in mathematical instruction (or other subjects). In this system teachers would have high status and be proficient in their subject matter. Children, on the other hand, would be expected to learn the academic material and to work hard on difficulties. Parents would assume partial responsibility for their children’s learning, aid in homework and self-study, set high but attainable standards for achievement, and evaluate their children’s progress toward short- and long-term academic objectives. Overall, the US would change from a culture of testing toward a culture of learning—with most people, rather than the few with high IQ, prepared by their education to compete for the opportunities of life.

Americans have notoriously been known for their belief in individualism, yet they have denied themselves a system where an individual can rise to the top through effort and hard work. It would appear that the American Dream is more of a myth today than in previous generations due to the emphasis placed on IQ testing rather than on personal achievement through effort and learning.

A Canadian Footnote

Our analysis also has important implications for the Canadian educational system. Although Canada has not implemented IQ testing to the same degree as the US, Canadian students have done just as poorly as their US counterparts on mathematical tests. In the Canadian system education is tailored to ensure that most students pass, with less attention paid to effort and achieved competence in the subject matter. In order to be certain that most people make it through the system, the content of the curriculum is continually downgraded to meet the levels of striving and achievement of Canadian students. Importantly, low levels of mathematical achievement in Canada could be ameliorated by the educational system we have outlined. Canadian parents and teachers, like their US counterparts, tend to set low standards for achievement and are often satisfied with average effort in core subjects. Moreover, as Stevenson’s studies demonstrate, students in Canadian schools place more responsibility for learning on the teacher than on themselves.⁵ That is, the

students attribute their mathematical performance to external sources (i.e., teachers) rather than personal causes such as effort and motivation. This attributional style means that Canadian students do not strive for achievement in mathematics and science and blame their failures on others. The overall pattern of attribution and expectations of Canadian students has severe implications for their future prospects. Compared with work-oriented students in other countries, Canadian students do not have (and do not seek) the high-level skills in mathematics and science that are valued by the global market. Without a change in our practices related to education, students from both the US and Canada will continue to lose ground in the world competition for knowledge-based employment. The survival of North American culture is at stake. An educational system based on effort and learning is the answer.

Notes

1. More information on parent involvement in the formal education of their children appears in Stevenson, Lee, Chen, Stigler, Hsu, and Kitamura (1990).
2. We are, of course, arguing that the relationships among IQ and social problems are spurious rather than causal. In our analysis, the covariation of IQ and any social problem results from the IQ-selection process (the causal factor).
3. For further information on mathematical achievement, see Crystal, Chen, Fuligni, and Stevenson (1994); Crystal and Stevenson (1991); Stevenson, Chen, and Lee (1993); Stevenson, Lee, Chen, and Lumis (1990); Stevenson, Lee, and Stigler (1986); Stevenson et al. (1990); Stevenson, Stigler, Lee, and Lucker (1985); Stigler, Lee, & Stevenson (1987).
4. Stevenson et al. (1985) report that the high achievement of Chinese and Japanese children cannot be attributed to higher intellectual abilities, but must be related to their experiences at home and at school.
5. The mathematical achievement results for Canada were presented by Harrold Stevenson to the Faculty of Education at the University of Alberta in 1994. Our discussion of Canadian education and mathematical achievement is based on summaries of these results.

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Should We Change our Views About Early Childhood Education?

The Bell Curve (Herrnstein & Murray, 1994) has facets too numerous for one review. Clearly each commentary must restrict itself to one subtheme of the book. My own choice is the consequences (implied or stated) for early childhood education. If I had chosen a second theme, it would have been intelligence and racism. Before discussing my main theme, here are a few comments on this other issue.

I do not believe that the defense against accusations of racism is nearly strong enough; the burden of proof remains today, as it did 20 years ago, on those who pursue research into differences between blacks and whites. The motivation for having undertaken this kind of research project—if other than based on a racist agenda—was not sufficiently forthcoming when Jensen presented his research in 1969. Nor does the present book come close to allaying these same suspicions. The disclaimers in the text are in the right direction; they are undermined, however, by other comments. One example concerns the research of Burt, a major player in IQ history. The allegations of falsification of research data are treated somewhat cavalierly, in the form of a small text box (p. 12) that simply repeats that some researchers side with Burt against his detractors. Given the explosiveness of the subject matter, I expected much more detail and argument. We are left at the most with an impression of “not proven,” rather than “not guilty.” Equally feeble is the reminder that Burt’s research conclusions concerning correlations between twins reared separately have been found by others. A second example of the cursory treatment afforded these issues appears in the Introduction (p. 5) where the accusation of racism in regard to early immigrants is treated. Once again, the box feebly attempts to downplay the issue. At best, there is an attempt once again to make the case of “not proven.” The tone in each of these examples (there are numerous others throughout the text) is nowhere serious enough. One gets the impression that lip service is being paid to the racism issue, but no more.

My focus in the present commentary, as mentioned above, is education: more particularly preschool education and the child from birth to 5 years old. Consensus in Quebec is that offering education at this age is a good thing, and not enough of it is being done. Compensatory education, or enrichment programs, are seen as particularly beneficial to the development of children suffering from one or other deficits. They are also seen as offering hope for raising the level of intellectual functioning of the vast majority of children.

Should any of these views be altered in view of the findings and arguments of *The Bell Curve*? The authors themselves are ambiguous concerning the educational consequences. At times they wish to adopt the view that there are no such consequences. Their thesis leaves everything as it is: "If tomorrow you knew beyond a shadow of a doubt that all the cognitive differences between races were 100 percent genetic in origin, nothing of any significance would change" (p. 314).

This view, reminiscent of the apologetics of Jensen in his 1969 article, seeks shelter in a form of the *naturalistic fallacy*. Thus the findings about intelligence are facts, and the educational conclusions are *oughts*. According to the philosopher David Hume, no *is* can imply an *ought*. Hence everything remains the same. To deduce an *ought* from an *is* is to commit a form of the naturalistic fallacy. This philosophical ploy is itself controversial, however. This is both because Hume and the naturalistic fallacy are debatable and debated (Flew, 1973; Hudson, 1969; Schleifer, 1973). In the context of intelligence and education, moreover, the lines between facts and values, between *is* and *ought* are even fuzzier than elsewhere. The authors, in their history of IQ, chose not to mention that Binet's test was for both intelligence and educability. These terms were used interchangeably in the context of having to decide which children would go to school and which not (there were not sufficient available places in France at the time).

In any case the authors themselves sometimes retreat from this nothing-follows line. They offer the contradictory and no less controversial version that does trace educational consequences. Here the thesis does attack the consensus mentioned above that compensatory education is worthwhile. First the authors remind us of differences between races on specific measures of intelligence:

The universality of the contrast in nonverbal and verbal skills between East Asians and European whites suggests, without quite proving, genetic roots. Another line of evidence pointing toward a genetic factor in cognitive ethnic differences is that blacks and whites differ most on the tests that are the best measures of *g*, or general intelligence. (p. 270)

Herrnstein and Murray mention spatial-perceptual ability (p. 302) citing Jensen (1969). Jensen had himself lumped these various abilities into abstract reasoning abilities. The first part of the argument, then, is to remind us of the genetic component linked to race, with the implication not to waste time or funds on inappropriate education. The second part of the argument is to be found in Chapter 17, entitled "Raising Cognitive Ability." Here we have the reaffirmation that Head Start and similar programs were a failure, and all will necessarily fail. Trying to bolster cognitive capacity wastes funds because it can only have a small effect, and for a short term (p. 389). Ignored here are those studies (Anderson & Messick 1974; Miller & Dyer, 1970, 1975) that have shown long-term improvement on intellectual persistence and effort when early intervention concerns itself with attitudes, motivation, and the total child.

Most of the studies and findings cited by the authors to illustrate the failure of compensatory and enrichment programs depend on their notion of cognitive ability that, as noted above, is reduced to intelligence, and then to IQ. Other studies (Boutin & Terrisse, 1990; Casto & Mastropiere, 1986; Dunst, Snyder, & Mankein, 1987) find exactly the opposite, namely, that preschool

programs have a long-term effect on compensating for early deficits. The crucial ingredient in these programs seems to be the implication of parents (Isserlis, McCue, Weinstein, & Sauvé, 1994; Terrisse & Boutin, 1994). Along these lines, several ongoing pilot projects are currently being conducted in lower-income areas in Quebec, British Columbia, and various sites in the United States offering early childhood programs, with the parents very much involved. Ironically, the authors of *The Bell Curve* themselves offer pertinent data showing the importance of the level of functioning of parents to the development of their children (pp. 220-232). Perhaps because of their own agenda they fail to see that these findings support, rather than oppose, the relevance of early education, particularly of the kind outlined above.

Another ingredient ignored by the authors in their evaluation of Head Start involves nutrition. Although on the one hand they themselves offer (pp. 389-391) data to support the importance of good nutrition in bolstering cognitive ability (even in their limited sense of IQ), they fail once again to draw the consequences for the beneficial effects of early childhood programs. As early as 1973, assessment studies of some Head Start programs had noted the improvements in children's health, nutrition, and social outlook (Richardson & Spears, 1972). It has been well documented that the participation of blacks in political life increased dramatically from 1963 on. These changes are widely acknowledged as due to the operation of Head Start programs. The authors are happy to mention ill health and poverty as important factors, but fail to draw the link between these two and early education. This link does manifestly exist.

Those who work with parents and young children believe that cognitive ability is enhanced. The studies, furthermore, that demonstrate the positive gains in these programs make use of a notion of cognitive ability different from that of Herrnstein and Murray. In the first place, aspects of cognitive, social, and emotional development are intertwined and linked. Children of 3 and 4, for example, who reflect on the notion of a rule are more likely at the age of 5 and 6 to understand a rule (cognitive development), internalize certain rules previously linked to an authority (social development), and accept certain rules with positive affect (emotional development). This research perspective is inspired by the work of Piaget.

The authors themselves too quickly dismiss a paradigm about cognition associated with Piaget. His view, relegated to the "revisionists," is seen as having a "different focus" (p. 20). They prefer, of course, the view about intelligence that permits the traditional IQ test and reduces cognitive ability and intelligence to IQ. What is important about education, however, is that Piaget's developmental view retains a strong concept of cognition without reducing this to changes in IQ. What the authors have dismissed as a change of focus is much more. The Piagetian view of cognitive development and cognitive ability is diametrically opposed to their notion of IQ. For Piaget intelligence is a continuous process of individual growth; it is not a set of discrete capacities. For Piaget the tests of Binet and Burt were necessarily limited, because he was interested in justifications and reasoning in order to better understand mental structure. Once again, this is much more than a difference in focus; it is an opposing view. Finally, the biological component of the Piagetian perspective must be mentioned in contrast to the psychometric ap-

proach that is based on the model of physics. Thus for Piaget there is always a structure evolving by interaction with the environment into a more complex structure. The nature-nurture debate is seen differently from this point of view. The other facet of the biological perspective is that the organism is essentially organized, not just a set of parts making up a whole. The affinity of Piaget for the integral personality, and education of the whole person, as seen in John Dewey's work, can be understood in the light of these biological underpinnings. Explicitly or implicitly, many of these Piagetian facets have influenced educators. For example, the Curriculum for Preschool Education of the Quebec Ministry of Education offers as its overall objective "To allow the preschool child to pursue his [or her] own path, to encourage his abilities, to develop relationships with others, and to interact with his environment" (p. 10).

This objective of preschool education is coherent with the view outlined above in regard to development adopted in research. It should be noted that early childhood education in this sense looks at the whole person and views the child as a person who acts and interacts with his entire being. It should be noted also, that this view of early childhood education applies to the functioning of the great majority of normal children, as well as those in need of specific enrichment due to impairment or deficit. Contrary to the authors' suggestions that only the elite ("those with the greatest potential") can and should be offered improved education (pp. 445-550), the majority of us working in education continue to believe in the appropriateness of aiming at educating the majority. I am working at the moment with a group of teachers who are introducing logic and philosophy at early ages in schools, including kindergartens and nurseries. One of the most visible results involves the exchanges, conversations, and arguments between children of all language backgrounds, colors, ethnic groups, and social milieux. What Herrnstein and Murray suggest as impractical and a waste, I see as the most precious of investments one can offer. At the research level, longitudinal studies are underway to evaluate the impact of the program. Needless to say, the criteria for assessing cognitive ability and cognitive development will not be in terms of IQ.

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Is *The Bell Curve* a Ringer?

In reading, thinking, or writing about *The Bell Curve* (Herrnstein & Murray, 1994) it is important, perhaps critical, to note that the book is not primarily about race or what the authors call ethnic differences (p. 271). The first sentence of the preface to the book states "this book is about differences in intellectual capacity among people and groups and what those differences mean for America's future." The book itself excluding the appendixes is 527 pages long. Roughly 70 pages (269-340) are devoted exclusively to the relationship between race and IQ. About 14% of the actual text considers the relationship between IQ levels and racial/ethnic background. Despite the fact that 86% of the book considers IQ primarily in reference to class, it is the three chapters out of a total of 22 that deal with the IQ-race relationship that have received the most attention from critics on both the right and the left.

There are large problems with the racial ethnic comparisons that Herrnstein and Murray make in the chapter that compares ethnic differences in cognitive ability. Herrnstein and Murray compare blacks and whites, but they note that they categorize people on the basis of "whatever they prefer to be called" (p. 271). These comparisons suggest that there are distinct racial groups and that these groups differ on many variables including IQ. It is obvious that a black person looks different than a white person, but is there a pure black or pure white group? Are we comparing somewhat, largely, or completely black people with white individuals who are qualified in a similar manner. If yes, how do we label or categorize someone who is half white and half black? A recent book, *The History and Geography of Human Genes* by geneticists Cavalli-Sforza, Menozzi, and Piazza (1993), suggests that after we get by surface traits such as skin color or hair texture there are very few significant differences among human groups. They note, as have many others including Murray and Herrnstein, that there is much greater variation within groups than there is between groups in terms of differences. Their conclusion is that at the level of genes, the very idea of race is lacking in significance. Now if at the genetic level we are remarkably similar, how can Murray and Herrnstein argue for genetically based differences in IQ? If Cavalli-Sforza et al. are correct, and there is much support for their position in modern anthropological and demographic studies, then the idea that there are substantial genetic differences between races is either suspect or false. How can one compare IQ scores according to a category that does not exist?

Herrnstein and Murray are aware of this problem and even cite Gould's observation that

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We now know that our usual metaphor of superficiality—skin deep—is literally accurate. Say it five times before breakfast tomorrow; more important, understand it as the center of a network of implication: “human equality [i.e., equality among the races is a contingent fact of history].” (p. 296)

The authors of *The Bell Curve* try to get around this problem by writing “but some ethnic (racial) groups nonetheless differ genetically for sure, otherwise they would not have differing skin color or hair textures or muscle mass. They also differ intellectually on the average” (p. 297). But we are still faced with the problem of which ethnic/racial category to put someone in who looks black but whose genes are 50% white. To complicate matters further, Europeans, who are the primary representatives of the white group in *The Bell Curve*, are believed to be a hybrid group made up of 65% Asian and 35% African genes. Thus the designated white group in this book is anything but white.

The word *racist* has been used extensively to describe both the book, the three chapters dealing with racial differences, and the authors themselves. It is probably not beneficial or helpful to label people we disagree with as being racists or rednecks or bleeding heart liberals or limousine socialists. It is indeed possible that the people who present positions that are contrary to or in direct opposition to our own may not only have something to say but may possess aspects of the truth that we have overlooked or ignored. In listening to and considering their positions we may well strengthen or understand our own position better. This was eloquently said by John Stuart Mill (Cohen, 1961) in his “Essay on Liberty” wherein he wrote that

The peculiar evil of silencing the expression of an opinion is, that it is robbing the human race; posterity as well as the existing generation; those who dissent from the opinion, still more than those who hold it. If the opinion is right, they are deprived of the opportunity of exchanging error for truth: if wrong, they lose, what is almost as great a benefit, the clearer perception and livelier impression of truth, produced by its collision with error. (p. 205)

Mill goes on to suggest that stifling an opinion is evil even if it is false.

First: the opinion which it is attempted to suppress by authority may possibly be true. Those who desire to suppress it, of course deny its truth; but they are not infallible. They have no authority to decide the question for all mankind, and exclude every other person from the means of judging. To refuse a hearing to an opinion, because they are sure that it is false, is to assume that their certainty is the same thing as absolute certainty. All silencing of discussion is an assumption of infallibility. Its condemnation may be allowed to rest on this common argument, not the worse for being common. (p. 205)

The Bell Curve presents many ideas that are contrary to majority opinion and especially to mainstream social science perspectives. It is a book that should be carefully read, debated, and discussed. Its evidence should be extensively analyzed and weighed and, if and where possible, complemented or refuted. The authors should not be regarded as Neo-Nazis (Rosen & Lane, 1994, p. 14) as one critic labeled them, nor should their work be seen as sleazy and an intellectual mess, as Ryan (1994, p. 11) suggests. Any attempt to deal with controversial social or individual problems has to be done in a candid, forthright manner that is devoid of namecalling or mudslinging. This has been the exception rather than the norm in the numerous reactions to this book.

What is desperately needed if we are to overcome our own ignorance and achieve some modicum of truth (notice the small t) is contrary evidence of a rational, empirical, or logical nature. Perhaps any discussion of class or racial differences in reference to IQ or any other variable like race or class should be guided by Pascal's observation that "we know too little to be dogmatic and too much to be skeptical."

With this in mind it is necessary to consider the significance or value of a book like *The Bell Curve*. The book contains a wealth of information on a number of different topics. It is difficult not to be impressed by the range of ideas and information presented and by the large number of graphs, charts, and illustrations used to clarify and condense the material presented. If you're into statistics, charts, and graphs as a way of concisely presenting data and results, then this book is for you.

On the general and primary theme of the relation of intelligence to social status and social pathology, *The Bell Curve* clearly demonstrates that being in the bottom one or two deciles of the IQ range of the population is often associated with high levels of social pathology. To quote the authors, "We have tried to point out what a small segment of the population accounts for such a large proportion of those problems" (p. 549). The problems referred to in the quote are things like illegitimacy: "The knowledge that 95 percent of poor teenage women who have babies are also below average in intelligence should prompt skepticism about strategies that rely on abstract and far sighted calculations of self interest" (p. 387). Poverty is also noted: "The high rates of poverty that affect certain segments of the white population are determined more by intelligence than by socioeconomic background" (p. 141).

The authors acknowledge that the level of education one achieves is related to social class, but then note that "if cognitive ability is high, socioeconomic disadvantage is no longer a significant barrier to getting a college degree" (p. 154).

In terms of race, intelligence, and level of education, *The Bell Curve* points out that for those possessing the 103 average IQ of all high school graduates, the chance of completing high school went up if one was black or Latino:

Consider, for example, graduation from high school. As of 1990, 84 percent of whites in the NLSY had gotten a high school diploma, compared to only 73 percent of blacks and 65 percent of Latinos, echoing national statistics. But these percentages are based on everybody, at all levels of intelligence. What were the odds that a black or Latino with an IQ of 103—the average IQ of all high school graduates—completed high school? The answer is that a youngster from either minority group had a higher probability of graduating from high school than a white, if all of them had IQs of 103: The odds were 93 percent and 91 percent for blacks and Latinos respectively, compared to 89 percent for whites. (p. 319)

In opposition to many sociologists, Herrnstein and Murray see almost all the variables noted above as relating to or emanating from intelligence. Their position is that low intelligence is an important factor in where the individual finds himself or herself in the social class structure of the United States. To use their terms, "we want to consider poverty and educational level and illegitimacy and many other social indices and pathologies as an effect rather

than a cause—in social science terminology as a dependent not an independent variable” (pp. 129-130).

The extensive discussion of intelligence and its relationship to the presence or absence of financial, occupational, or educational success leads to one of the most controversial issues in *The Bell Curve*. If it is intelligence rather than class or race that is most influential in determining one’s job, socioeconomic status, or general success in life, then the question of the source of IQ looms large. This is the reason for so much of the volatile and heated controversy that surrounds this book and its general theme.

First a note of clarification. The authors of *The Bell Curve* are not arguing that IQ is primarily genetic and therefore minimally or not at all vulnerable to modification. They state clearly and without equivocation:

If the reader is now convinced that either the genetic or environmental explanation has won out to the exclusion of the other, we have not done a sufficiently good job of presenting one side or the other. It seems highly likely to us that both genes and the environment have something to do with racial differences. What might the mix be? We are resolutely agnostic on that issue; as far as we can determine, the evidence does not yet justify an estimate. (p. 311)

To add to this, a box on page 410 describes the significant influence of the environment on human development and intelligence. It uses the example of a feral child and concludes with this sentence: “If the ordinary human environment is so essential for bestowing human intelligence, we should be able to create extraordinary environments to raise it further.” The authors observe that the relationship of IQ to intelligence is not well understood.

Even so, the instability of test scores across generations should caution against taking the current ethnic differences as etched in stone. There are things we do not yet understand about the relation between IQ and intelligence, which may be relevant for comparisons not just across times but also across cultures and races. (p. 309)

But the potential optimism present in this part of the book is dashed in other sections when the authors state: “An individual’s realized intelligence, no matter whether realized through genes or the environment, is not very malleable” (p. 314); “For many people there is nothing they can learn that will repay the cost of teaching” (p. 520).

Could the situation be that bad? Are the options so limited in number and extent that some groups of individuals should be written off? Are there any successful programs anywhere or is the only possible conclusion that:

Taken together, the story of attempts to raise intelligence is one of high hopes, flamboyant claims and disappointing results. For the foreseeable future, the problems of low cognitive ability are not going to be solved by outside intervention to make children smarter. (p. 389)

Two points need to be made here. One is that it may be time to back off, cut a little slack, or direct a little “benign neglect” to the significance and value of IQ numbers and instead look for concrete, specific ways of helping students who are disadvantaged, from whatever source, to simply do better in schools. (*The Bell Curve* is a substantial and informative book, but is it possible it is too concerned with IQ scores? If one had a choice between having a high IQ score

or doing well in school, which would most people choose?) There are programs that are effective, in some cases highly effective, in helping the disadvantaged to do well in school. Following is a description of a school in the middle of the Chicago ghetto. It is full of black and generally poor children whose academic performance, if *The Bell Curve* is correct, should be at the lowest levels.

As the patience of whites for other whites wears thin, the black inner city will simultaneously be getting worse rather than better. Various scholars, led by William Julius Wilson, have described the out migration of the ablest blacks that has left the inner city without its former leaders and role models. Given a mean black IQ of about 85 and the link between socioeconomic status and IQ in ethnic populations, the implication is that the black inner city has a population with a mean IQ somewhere in the low 80s at best, with a correspondingly small tail in the above-average range. (p. 522).

Somehow, this school that has a very clear, highly disciplined, and structured program with very high expectations of its students has “achieved honors as an academic institution above the national norms in all disciplines.”

In the Chicago ghetto today the only institutions with a record of consistently getting people out of the underclass are the parochial schools. They pay their teachers much less than what public-school teachers are paid, but they can screen their applicants, their principals can hire and fire, and they can and do impose many rules on both the students and their parents. (Ghetto public “magnet” schools that are allowed to screen are also successful.) Father George Clements, the pastor of the Holy Angels Catholic Church, describes the regimen at its elementary school this way: “We have achieved honors as an academic institution above the national norm in all disciplines. We bear down hard on basics. Hard work, sacrifice, dedication. A twelve-month school year. An eight-hour day. You can’t leave the campus. Total silence in the lunchroom and throughout the building. Expulsion for graffiti. Very heavy emphasis on moral pride. The parents must come every month and pick up the report card and talk to the teacher, or we kick out the kid. They must come to the PTA every month. They must sign every night’s homework in every subject. They must come to Mass on Sundays. They must take a required course on the Catholic faith. The kids wear uniforms, which are required to be clean, pressed, no holes. We have a waiting list of over a thousand, and the more we bear down, the longer the list gets. (Lehman, 1986, p. 69)

But Holy Angels is not the only Catholic school in the US that appears to be effective in educating those at the lower levels of American society. James Coleman, the American sociologist compared the effectiveness of public and parochial schools in the US. He found that it is useful to note that Catholic elementary schools in the US get no public funding, pay their teachers much less than public school teachers get paid, generally have little or no technical support, and spend about half to one third less on each of their students than their public counterparts. Despite all this, they do a much better job of educating their students, many of whom come from the lower echelons of American society than the public schools do.

In their book *Public and Private Schools*, Coleman and Hoffer (1987) compared Catholic and public schools over a three-year span. They found that poorly funded and equipped Catholic schools did a much better job of educating

ing their students than the public schools did. In that three-year span, the Catholic school students gained almost one full grade equivalent in verbal and mathematical abilities.

A third example that is even more dramatic than the previous two may help. On page 444 of *The Bell Curve* this observation appears:

Our proposal will sound, and is, elitist, but only in the sense that, after exposing students to the best the world's intellectual heritage has to offer and challenging them to achieve whatever level of excellence they are capable of, just a minority of students has the potential to become "an educated person" as we are using the term. It is not within everyone's ability to understand the world's intellectual heritage at the same level, any more than everyone who enters college can expect to be a theoretical physicist by trying hard enough. At every stage of learning, some people reach their limits. This is not a controversial statement when it applies to the highest levels of learning. Readers who kept taking mathematics as long as they could stand it know that at some point they hit the wall, and studying hard was no longer enough.

But the film *Stand and Deliver* may be instructive. It describes the teaching approach, work ethic, and perhaps most importantly the high expectations of Jaime Escalante for his lower-class Latino students. By dint of hard work, perseverance, diligence, discipline, and a profound commitment to their academic development, Escalante taught his students enough advanced math so that they could pass the Educational Testing Services (ETS) calculus exam. As the film makes clear (and as actually happened) the representatives of ETS did not believe that lower-class Latino high school students could learn math and especially calculus. Like Herrnstein and Murray, they assumed that you can't get blood (i.e., passing grades on an ETS calculus exam) out of stone (i.e., lower-class Latino students). At the end of the film, there is an indication that more and more lower-class Chicano students from that school took and passed the calculus exam. In an interview, Edward Olmos, who played the part of Escalante in the movie, noted that of the original 18 students who took and passed the calculus exam, 17 went to and finished college. Perhaps Mill was correct when he suggested that "one should always aim high and when you achieve that you won't achieve only that."

It is recognized that none of these examples has control groups or is capable of statistical analysis, and they are certainly not very empirical in their data or results. But could that not be positive? They give a sense of what is possible, not what is measurable.

These effective programs demonstrate that the problems that characterize North American education today are not going to be resolved, or perhaps even diminished, by *The Bell Curve* or any book like it. Perhaps Tyrell's (Schumacher, 1973) distinction of convergent and divergent type problems will be helpful. Most serious human problems and especially those associated with education are not of the convergent variety. A convergent problem is one that is open to logical, mathematical, or purely rational solutions. Math problems and many scientific questions are of this nature. Divergent problems are those that emanate from and are expressive of human relationships in all their myriad possibilities in human communities. These difficult issues are seldom open to resolution by mathematical or logical procedures. *The Bell Curve* presents all its

findings in a convergent mathematical format. Social science data like those found in *The Bell Curve* can provide useful information, but are usually not complete or clear enough to indicate clear and specific solutions. In opposition to this, divergent problems generally express issues for which there are no quick or easy or uniform answers. They encourage or demand that we go beyond what we clearly know or can clearly understand into realms where individual or social values are the determining factors.

Convergent problems are much easier to deal with than divergent ones. They often have distinct, clear answers and are readily and effectively expressed through charts, graphs, numbers, and various statistical or mathematical techniques. *The Bell Curve* presents its material as if the question of IQ and its relationship to class or race or social pathology were simply a matter of numbers and charts and lines on graphs. But there are distinct and highly significant social norms involved in how we value, express, and respond to variables like cognitive ability or intelligence. We may need a book that analyzes these social values as much as we need a book like *The Bell Curve* that seems to avoid them. Our most significant and complex social problems and especially the numerous problems associated with the process of education are not going to be resolved or even approached by a recipe-like process of putting in two egg charts, a tablespoon of statistical analyses, and then sifting in three graphs in the hope that *an* or *the* "answer" will be discovered after 45 minutes in the social oven. If we begin to value the statistical findings, graphs, and charts that constitute so much of *The Bell Curve* over the individual students in our schools or citizens in our cities then any chance of accurately envisioning, much less solving, our social problems may be lost. Keyes (1975) said this cogently in his novel *Flowers for Algernon*:

"Don't misunderstand me," I said. "Intelligence is one of the greatest human gifts. But all too often a search for knowledge drives out the search for love. This is something else I've discovered for myself very recently. I present it to you as a hypothesis: Intelligence without the ability to give and receive affection leads to mental and moral breakdown, to neurosis, and possibly even psychosis. And I say that the mind absorbed in and involved in itself as a self centered end and to the exclusion of human relationships can only lead to violence and pain." (pp. 173-174)

The Bell Curve is a useful, perhaps necessary, book, but it has to be seen and understood in reference to the values of North American society. To view it outside that framework could be not just invalid, but harmful.

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Distorted Vision: Education as Seen Through *The Bell Curve*

In the world according to *The Bell Curve* human lives are played out within boundaries determined by IQ and its correlates. The work of educators fits within that area, confined by students' "intellectual capacity" and configured by the interminable force that capacity exerts on each student's movement in society. In that world teaching begins by recognizing the trajectory nature has set for students as a result of their intellectual endowments, and progresses through a kind of intellectual and social streamlining of students—a shaping of their capacities and desires so they can be carried along, quickly and efficiently, to their proper and inevitable "place" in society. Herrnstein and Murray (1994) suggest this world as the focus of policy, a vision of the future that educators can use to guide their work. Although the data that they rely on to support their arguments for this vision can be (and have been) questioned in a variety of ways (Gould, 1994), we agree with those who suggest that this book and the vision it promotes may nonetheless become a "subtext for virtually every policy decision made concerning race, class, and social welfare" for at least the near future (Scott, 1994, p. 59). It is important to consider the vision Herrnstein and Murray present, even if its empirical support is fallacious, for the direction in which it might lead us as educators. We argue that the vision they offer would distort the purposes and practice of education by its selective attention to a single human attribute that they consider in relation to a limited set of educational factors and highly constrained set of educational goals.

Herrnstein and Murray would have us believe that social privilege and injustice are nothing other than articulations of innate propensities. These propensities are directly related to a variety of characteristics that are recognized as the basis of social class, which in turn affects much of social life. "Social class remains the vehicle of social life," they tell us, "but intelligence now pulls the train" (p. 25). It is an interesting metaphor, and similar to one that Walzer (1983) uses to describe the influence that the valuing of a particular attribute to the exclusion of others has in matters of social inequality and injustice:

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Physical strength, familial reputation, religious or political office, landed wealth, capital, technical knowledge: each of these, in different historical periods, has been dominant; and each of them has been monopolized by some group of men and women. And then all good things come to those who have the one best thing. Possess that one, and the others come in train. (p. 11)

The Bell Curve is essentially about what the authors hold to be the “one best thing,” intelligence. Other aspects of social life—such as school achievement, accomplishments in the work place, a stable family life—are the direct and indirect products of this fundamental capacity that they present as predominating all others.

Herrnstein and Murray’s vision is based on a simplistic version of distributive social justice. Inequality is the result of the unequal distribution of intelligence, the universal and singular currency of social life. The dominance of intelligence provides a social monopoly to those who possess it to the greatest degree, that is, those that have the highest IQs. In *The Bell Curve* the monopoly of intelligence is compounded by Herrnstein and Murray’s claim that it is both pivotal to success in all areas and genetically determined. They conflate and naturalize social supremacy of the well bred—aristocracy—with social supremacy of the highly talented—meritocracy—into a system of inescapable domination, which is in many respects outside of the control of humanity. Social inequity is, in Herrnstein and Murray’s formulation, the result of natural differences in intelligence.

An important factor in Walzer’s (1983) discussion of social justice is his assertion that there is no single standard for what will be valued in society. A given attribute attains a position of dominance as a matter of what has come to be appreciated and rewarded by a group. It is not due to the intrinsic worth of the attribute, but to the significance assigned to it. Artistic talents, physical strength, or emotional sensitivity could be dominant if a group came to value them over all others. Herrnstein and Murray apparently recognize this, agreeing that “the concept of intelligence has taken on a much higher place in the pantheon of human virtues than it deserves” (p. 21). At the same time they argue for intelligence as the singular standard by which to judge social life and set social policy. So, for example, although they are scrupulous in their disavowal of social engineering, they complain that current social policies encourage the “wrong women” (p. 548) to have children, a judgment they base on the mean IQ and other statistically assigned attributes of the groups with which they have identified the women. *The Bell Curve* is in effect an argument for an ideology in which social power is primarily and rightfully ordained first and foremost by intelligence.

With this focus on intelligence, attention turns away from other aspects of human life. In lived experience attributes such as caring, sensitivities to justice, creativity, intelligence, and others interact so that each affects what is done, with none of them predominating exclusively. Certainly human life is not just a matter of applying the singular attribute that is appropriate in a given situation. Rather than recognize this, Herrnstein and Murray strive to extend the dominance of IQ by presenting data they insist demonstrate its pervasive influence and with arguments to the effect that those who are most intelligent are also most valuable to society. The dominance of intelligence becomes

monopoly, and even tyranny, as it invades even the most personal aspects of life (Walzer, 1983, p. 18). Intellect is portrayed as rightfully dominating all decisions, including those involving childrearing, marriage, and where we might live. The pervasiveness they claim for the role of IQ is all the more troubling with the realization that whatever it is that is being measured by the tests Herrnstein and Murray are putting such faith in is certainly narrower than the attributes it will be taken to represent. That is, of course, assuming that the tests measure anything at all.

This concern with the distribution of a single characteristic carries over into their discussion of education as well. In general, they argue that the distribution of intelligence should influence the distribution of educational resources—students to whom nature has given more intelligence should be given more attention, more funding, and more challenging standards than they are now. Whatever a student might have to offer other than what shows up on IQ tests would be either neglected or granted only subaltern status as intelligence becomes the characteristic that defines students' position in school. Witherell (1991) points out the danger for educators of becoming too sure of what is important to know about students as she warns that

When conceptions of the person, self, and community are not continually called into question in professional practice, reified and reductionist concepts emerge as common practice, creating new forms of "common sense" in the profession. Examples of such practices include excessive reliance on normative measures of aptitude, intelligence, psychopathology, values, or developmental states for educational or psychological assessment. (p. 84)

Considerations of particular aspects of human thought and experience in isolation are often useful for describing how they might mitigate learning, understanding, decisions, and other processes. However, the focus on any particular attribute or set of attributes has to be considered strategic and provisional, with the attributes being primarily artifacts of the assessments themselves. "Too often," Witherell continues, "diagnostic instruments take the place of the attention and dialogue that the practitioner needs in order to understand individuals in the context of their personal and cultural environments" (p. 84).

The need to address such contexts has been pointed out repeatedly in education, and in particular with respect to the inadequacy of the simpler forms of distributive justice that attend only to who has or is getting how much of something (Troyna & Vincent, 1995). Connell (1992) has stated that, "education is a social process in which the 'how much' cannot be separated from the 'what'" (p. 5). That is, the scope of education cannot be meaningfully discussed without also attending to its content. The explicit discussion that Herrnstein and Murray offer regarding the "how much" of education, therefore, also implicitly conveys messages as to the "what" that they would promote. They recall "the old days" when

Standards would have been raised if students were to read a larger number of the Great Books (no one would have had much quarrel about what they were) or if students were required to write longer term papers, subject to stricter grading on argumentation and documentation. (p. 432)

What is denied by the parenthetical comment in the remark above is the importance of the discussions that must be undertaken regarding the “what” of the curriculum, including what should be read. For Herrnstein and Murray, the struggle that began in the 1960s to have the curriculum reflect the multicultural character of our society, and specifically the challenge that this poses for a curriculum based on an elite European tradition, served to “corrupt” (p. 432) educational standards. Perhaps they are forgetting the arguments that have been made regarding the relationship of knowledge and power in society. Perhaps they are forgetting how that relationship has been shown to extend into schools through the “deep imbrication of traditional, canonical school knowledge in the legitimation of authority and inequality in society” (McCarthy, 1993, pp. 289-290). But such critiques, which are still being made (Bishop, 1990; Castenell & Pinar, 1993; Joseph, 1987; see also Pinar, Reynolds, Slattery, & Taubman, 1995, section III), must be remembered in any discussion of education, for they have a great deal to say about the legacies of imperialism, the ongoing struggles to understand the role of curricula in racism and sexism, and the inequities that result from favoring certain forms of knowledge while overlooking or deriding others. Allowing such critiques to be forgotten, or more likely actively neglected, reinforces the subjugation and marginalization of students whose personal and/or cultural contexts differ from what is assumed to be proper curricular knowledge. No approach to education can provide hope for social justice if it does not recognize the history of struggle over curricular knowledge and the need to continue these struggles continuously as a hedge against the inclination to universalize dominant knowledge.

The injustices that follow from neglect of the importance of context are also supported by the structure of the arguments presented by Herrnstein and Murray, particularly with respect to the implications that such neglect would have for policies in education and other areas. The book discusses education and a range of other social issues in terms of generalizations such as group means. Herrnstein and Murray indicate that they appreciate the limits of such generalizations, and early in the book readers are told that “*Measures of intelligence have reliable statistical relationships with important social phenomena, but they are a limited tool for deciding what to make of any given individual*” (p. 21 original emphasis) and that “this thing we know as IQ is important but not a synonym for human excellence” (p. 21).

However, in everyday interactions people are all too often identified as members of groups before they are identified as individuals, and it is here that stereotypes can have a major impact on relationships. Posner (1981) presents the case that assumptions about individuals are often made by invoking the expediency of assuming a member of a group shares traits associated with the group generally:

To the extent that race or some attribute similarly difficult to conceal (sex, accent) is positively correlated with undesired characteristics or negatively correlated with desired characteristics, it is rational for people to use the attribute as a proxy for the underlying characteristics with which it is correlated. (p. 362)

This is what is referred to as discrimination based on “information cost.” It is premised on the idea that gaining the information needed to assess individuals

with respect to the assumed traits is too costly (or too risky) in terms of time, energy, finances, and so on. To economize on information costs, group trends are taken as sufficient to represent the individual. When this is bolstered by statistical correlations such as those Herrnstein and Murray present, it provides the basis of, for example, the “‘probabilistic turn’ in which racial identity comes to be rewritten as a statistical property” (Gates, 1992, p. 331). With respect to identifications of “race” and other attributes, stereotypes associated with groups are themselves a matter of selective attention and prejudiced representations, but in *The Bell Curve* they take on renewed status and significance.

Invoking a probabilistic turn in several areas at once, *The Bell Curve* shifts from early discussions of the “cognitively disadvantaged” to “the disadvantaged” to definitions of the disadvantaged that include all children served by a range of federal programs in the United States:

The programs we designated as for the disadvantaged were the [Elementary and Secondary Education Act of 1965 (ESEA)] Title I basic and concentration grants, Even Start, the programs for migratory children, handicapped children, neglected and delinquent children, the rural technical assistance centers, the state block grants, inexpensive book distributions, the Ellender fellowships, emergency immigrant grant education, the [ESEA] Title V (drug and alcohol abuse) state grants, national programs and emergency grants, [ESEA] Title VI dropout, and bilingual program grants. (p. 753)

In *The Bell Curve*, then, social characteristics that correlate with achievement become proxies for academic potential. Are we to suppose, for example, that because the immigrant population is “probably somewhat below the native-born average” (p. 364) all immigrant children should be assumed to be cognitively disadvantaged? Similarly, are all bilingual children, migratory children, handicapped children, and others to be considered at the low end of the cognitive distribution, rather than disadvantaged due to lack of dominant cultural experiences, access to resources, or other limitations as was intended by the original framing of the ESEA (MacKintosh, Gore, & Lewis, 1965)? In the original framing, the ESEA was intended to assure that students’ opportunities not be constrained by economic, social, personal, and other factors that were not intrinsic to the student. Alternatively, relying on group trends, which seems to be part of the vision Herrnstein and Murray offer educators, could end up truncating students’ opportunities because of the limitations they are assumed to have as selected features that are statistically associated with their demographic backgrounds, taken to indicate their personal characteristics.

As in the discussion of context above, the reductionism of such an approach threatens the integrity of education. Posner (1981) points out that making decisions based on information costs leads to lost opportunities for “valuable associations” with individuals who are treated only as group members (p. 362). For educators, the associations that would be precluded in efforts to economize on information costs are the very associations with students required for effective pedagogical relationships in which students’ needs, abilities, interests, and desires are known and responded to by educators. To forgo such associations is to assume beforehand that some students, who can be identified largely by demographic factors, will simply not make it in school or society to become

anything but subordinate, whereas others have a social profile that shows that they are obviously going to excel, succeed, and lead. It is reasonable, if one believes *The Bell Curve*, and it is efficient; it is also patently unjust.

The concerns with the support the book offers for approaches that economize on information costs are made all the more pronounced when one considers that there are already significant effects on children due to various social biases in schools. A powerful example of this can be seen in the results of the Second International Mathematics and Science Study (SIMS), which Herrnstein and Murphy cite along with others to support their contention that gifted students are not being led to develop their full potential in schools (p. 417). Taking a trivial “horse race” view that is common in many approaches to the results of international studies, Herrnstein and Murray initiate a discussion relating achievement to their concern with the distribution of educational resources. They begin by pointing out that the US typically scores in the middle or bottom of international comparisons. They use these results to bolster their case that gifted students need more than they are getting from educators.

In outlining what might be done, however, they ignore the influences of major sources of variability on students’ achievement scores. Given their focus on the importance of IQ in their analysis and recommendations, one might expect the greatest source of variation in students’ achievement to be differences in students’ ability, that is, differences between students would explain more of the variance in students’ scores than any other factor. In fact, as Figure 1 shows, in the US between-classroom differences accounted for slightly more (47%) of the variance in grade 8 students’ achievement in SIMS than did differences between students (46%); the remainder is between-school variance (Schmidt, Wolfe, & Kifer, 1992). In Japan, on the other hand, 91% of the variance in students’ achievement was attributable to differences between students and only 9% to differences between schools. Between-classroom variation in Japan was negligible. What this means is that in the US the classroom or course in which a student was enrolled was at least as important—in terms of accounting for students’ achievement—as factors personal to the students: IQ, motivation, socioeconomic status, and so on. Figure 1 shows the relative strength of the variance components for Japan and the US.

The size of the between-classroom variance component for the US is largely a function of pedagogical practices such as streaming or tracking of students into different courses and curricula. It is useful to consider, then, how students come to be placed in different mathematics classes.

In general, throughout the US, the biggest difference in mathematics classes at grade 8 has to do with which students take algebra, a course that at that level is intended for students with high ability in mathematics. Decisions as to which students will take algebra in grade 8 are made locally, at the school level, and the criteria used to make the selection vary across schools. Results from SIMS show that this decision making process is weak in that many students placed in nonalgebra courses actually have higher achievement scores than many algebra students. Only about half of the top 10% of the US students on the SIMS, and a third of the top 25%, were taking algebra, indicating that many errors were made in determining which students were the most capable (Kifer, 1992).



Figure 1. Variance components for school, classroom, and student in SIMS (adapted from Schmidt, Wolfe, & Kifer, 1992).

Taking a closer look at who the students were that were taking algebra, some troubling indications emerge. Of the highest achieving 25% of US students in SIMS, 91% were white. So one might reasonably expect that about this same proportion of the students taking algebra would be white. As Figure 2 shows, the actual number is fairly close, 92%. The expected and actual proportions are also quite close for the number of girls enrolled: 49% expected and 50% actual. When father’s occupation is considered (which was used as a proxy for SES) there is more disparity: 32% would be expected to come from families in which the father was in a professional occupation, whereas the actual number is 40%. When the students who scored in the second 25% on SIMS are considered, the divergence between expected and actual numbers of students enrolled becomes pronounced. The results show clearly that white students, girls, and students whose fathers were professionals were disproportionately likely to be selected for grade 8 algebra (Kifer, 1992).

Each of these three attributes should be expected to be irrelevant to selection for algebra, unless they were being used in an atmosphere where “race,” gender, or family background were assumed to be related in a causal way to ability or academic achievement. *The Bell Curve* provides evidence construed in a way that supports such assumptions. This has serious implications because of the way the high school curriculum in the US is structured. Entry into high-status courses such as calculus is the culmination of a sequence of courses taken over several years. Therefore, the opportunity to take those high-status courses is almost always restricted to those students who studied algebra in grade 8. Thus the classification decision in grade 8 has important consequences for individual students’ opportunities.

These results suggest that the US educational system is undermining the achievement of many students, by the meritocratic practice of selecting students for homogeneous grouping based on achievement. In more egalitarian systems, such as Japan where students of all abilities learn in the same classroom at the grade 8 level, the achievement of all students is enhanced.

As is often the case in education, the implications of the SIMS results are not apparent from a trivial look at the data. Questions in education cannot be reduced simply to who scores higher on a test. Herrnstein and Murray’s

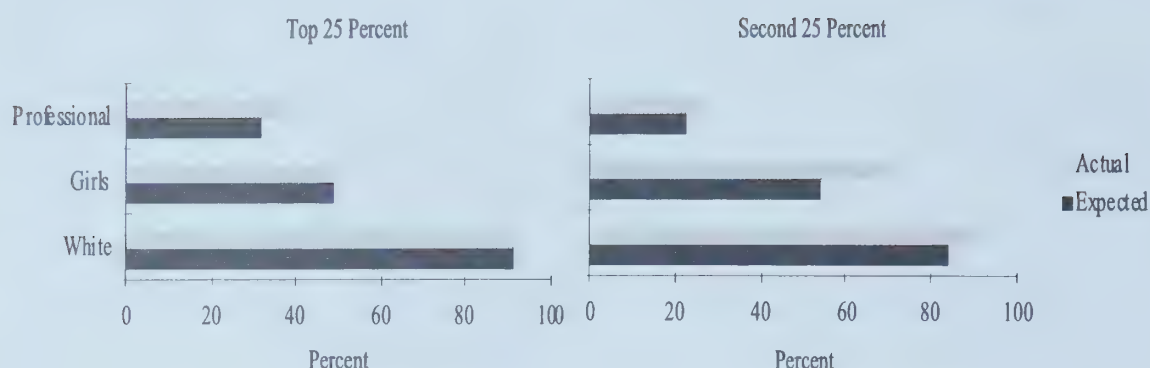


Figure 2. Participation rates in grade 8 algebra in the United States from SIMS (Adapted from Schmidt et al., 1992).

reliance on such indicators without reference to more subtle factors may well lead to an intensification of the same meritocratic practices such as homogeneous grouping that seem to have contributed to the results they use as evidence for the problems they would have educators address.

Also, although it may not concern the authors of *The Bell Curve* in their exclusive attention to achievement, other studies have shown that identifying students as gifted for the purposes of special programming seems to have the effect of inhibiting creativity and contributes to a variety of social and emotional problems experienced by the students (Freeman, 1994a, 1994b). There are certainly other studies that would offer still more considerations regarding how to proceed. The point is that many factors, including the contexts, contents, and practices of education must be considered in determining policy, and with reference to more than a single scale such as IQ.

A final point must be made with respect to Herrnstein and Murray's deliberate attempts to divert attention from some of the most serious implications of their work, namely, the realization that their recommendations are predicated on the perpetuation and even the intensification of social injustice. In addition to providing data and arguments that can be applied to various sites at which biases can operate such as selection for high-status classes, *The Bell Curve* maintains a position throughout that inequities, even those with dire consequences, are inevitable, and educators should make the best of them. In fact, the authors are quite explicit about telling readers to disregard the inequities that are quite obviously being promoted as based on natural laws. Besides, to ask questions as to the effects of focusing on one segment of the student population is irrelevant, or so readers are told, because "the answers to such questions have nothing to do with social justice but much to do with the welfare of the nation, including the ultimate welfare of the disadvantaged" (p. 442). They go on to say:

To be intellectually gifted is indeed a gift. Nobody "deserves" it. The monetary and social rewards that accrue to being intellectually gifted are growing all the time, for reasons that are easily condemned as being unfair. Never mind, we are saying. The gifted youngsters are important not because they are more virtuous or deserving but because our society's future depends on them. (p. 442)

In this twisted rhetoric, increased injustice for those who are already treated unjustly is deemed acceptable, and probably becomes necessary for later justice. This deferred justice, a vision of which is apparently not even imaginable, will come at the hands of those who are already privileged, because they will have the opportunity to find a way out of unjust social conditions. The outrage the reader might feel at inequitable societal patterns is to be assuaged by advice offered about what to do instead of trying to dismantle privilege. They state, for example, that

Most gifted students are going to grow up segregated from the rest of society no matter what. They will then go to the elite colleges no matter what, move to successful careers no matter what, and eventually lead the institutions of the country no matter what. Therefore, the nation had better do its damndest to make them as *wise* as it can. If they cannot grow up knowing how the rest of the world lives, they can at least grow up with a proper humility about their capacity to reinvent the world *de novo* and thoughtfully aware of their intellectual, cultural, and ethical heritage. They should be taught their responsibilities as citizens of a broader society. (p. 443, original emphasis)

Embedded in this view is the assumption that society's future does not depend on the rest of the students, those who are not so lucky as to have been gifted. The future, at least the one that would take society in what the book projects as a positive direction, certainly does not depend on students at the lower end of the cognitive distribution, regardless of what else they might have to offer society. What the book invokes, then, is a form of social triage, or placing students in groups that lie on a continuum with respect to the likelihood of their academic success and approaching their instruction accordingly (Books, 1992). At one end are those who have the dominant characteristic, intelligence, and are most likely to provide benefits to society in important and unique ways. In the middle are students who are necessary, but are eminently replaceable in their insuperable averageness. At the other end are students who are expendable with respect to what they might offer society. In *The Bell Curve* it is this triage that determines the dispersal of educational resources as concern for individual students is overwhelmed by a faith in indeterminate collective progress.

Conclusion

Throughout *The Bell Curve* a single human attribute is privileged. The book presents an argument that most human differences can be traced to it and almost all social injustices explained by it. The social struggles that have invigorated the work of teachers over the past several decades, as well as presenting them with their most important challenges, are neglected or are presented as forces that have corrupted and degraded education. To suggest policy with such a limited focus can only debase the goals of education and pervert educators' relationships with students.

Much work has already been done toward understanding the role of education in aspects of students' lives that intersect with intellect, but also involve awareness that goes beyond what intellect alone can offer. Several authors have addressed the ethical and moral aspects of both curriculum and instruction (Goodlad, Soder, & Sirotnik, 1990; Jackson, Boostrom, and Hansen, 1993;

Witherell and Noddings, 1991). What we see in these areas is a more complex vision of social justice than that invoked by Herrnstein and Murray. In such a vision, society would be sensitive to and value a variety of human attributes. Social interactions would involve reliance on constantly shifting asymmetries of not only intelligence, but also creativity, empathy, aesthetic appreciation, caring, and other aspects of human life. Attending to a variety of human attributes while also respecting the effects of students' social and personal contexts would offer a vision of education that could enhance social justice not only in some distant undreamt of future, but also in the day-to-day practices of teaching in the present.

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